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ABSTRACT

Intended for use in Florida training programs for caregivers of infants and toddlers with disabilities, this guide presents an overview of the Model of Interdisciplinary Training for Children with Handicaps (MITCH); offers a user's guide to the series; and provides specific information for presenting Module 9, which focuses on motor development. After the introduction to the MITCH program as a whole, the user's guide provides information on the instructor's role, the 3-hour training session, the use of videotapes and audiotapes, and follow-up activities. For this module, goals and objectives focus on providing participants with an understanding of normal motor developmental sequence, characteristics of abnormal motor development, common abnormal movement behavior, appropriate positioning and handling techniques, the role of physical therapy, development of the normal grasp pattern and fine motor coordination, problems encountered in fine motor development, and the role of occupational therapy. For each hour, a script, suggested activities, and relevant handouts are provided. Attached are lists of recommended resources and references, reproducible forms and handouts, and forms for the 6-week follow up. Also attached is an overview of normal child development from birth to 36 months in the areas of personal and social skills, language and understanding skills, small muscle skills, and large muscle skills. (DB)

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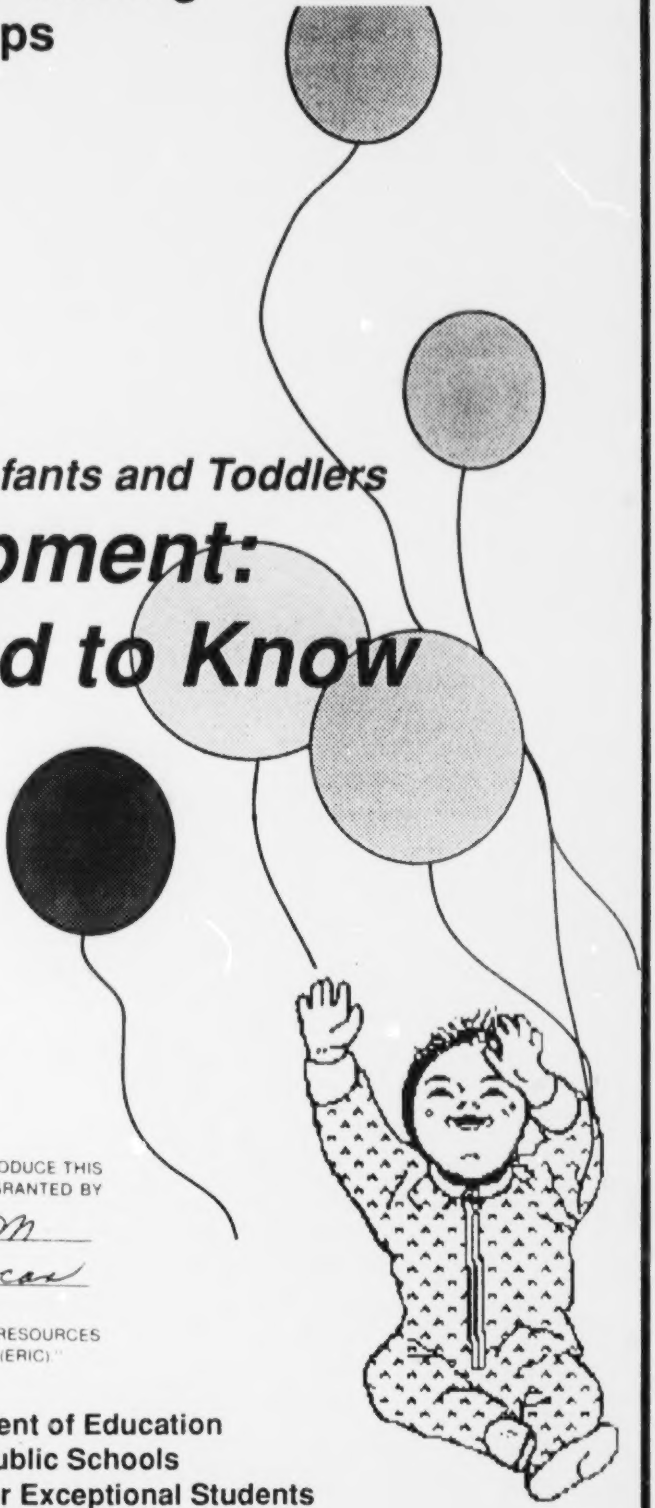
MITCH Module 9

Model of Interdisciplinary Training for Children with Handicaps



A Series for Caregivers of Infants and Toddlers

Motor Development: What You Need to Know

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1990

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MITCH Module 9

Model of Interdisciplinary Training for Children with Handicaps

A Series for Caregivers of Infants and Toddlers

Motor Development: What You Need to Know

Florida Department of Education
Division of Public Schools
Bureau of Education for Exceptional Students
1990

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MITCH Module 9

Model of Interdisciplinary Training for Children with Handicaps

A Series for Caregivers of Infants and Toddlers

Motor Development: What You Need to Know

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Introduction

Information in the Introduction should be reviewed by each instructor or user of this material. The User's Guide to Series begins on page 5. Information relating to this module begins on page 11.

PROJECT MITCH OVERVIEW

The purpose of the Project MITCH (Model of Interdisciplinary Training for Children with Handicaps) training series is to assist local school districts in Florida in providing interdisciplinary training and resources to parents, non-degreed daycare workers, and healthcare providers who work with special needs infants and toddlers ages 0-5, with emphasis on ages 0-2.

This series was funded by a grant to the Florida Diagnostic and Learning Resources System/South (FDLRS/South), on behalf of the FDLRS Network, from the Florida Department of Education, Bureau of Education for Exceptional Students (BEES).

In 1987, the Florida Legislature designated $100,000.00 of the total appropriation for the FDLRS Network to "expand services to infants and preschool children." The application submitted by Dade County on behalf of the FDLRS/South Associate Center serving Dade and Monroe Counties was selected for funding and was initiated on May 25, 1988. FDLRS/South collaborated with FDLRS/Mailman at the University of Miami and FDLRS/Gateway, serving Hamilton, Columbia, Lafayette, Madison, and Suwannee Counties, to complete the work under the grant. Outcomes of the project include:

- assessment of the status of training and resources for the designated population
- design of a collaborative implementation and training model to include development of competencies, replicable training modules which enhance or expand the HRS eight-hour special needs child care module, an adapted training plan for daycare providers, recommendations for curricula to be used in daycare and preschool programs, and recommendations for provision of consultation to parents
- validation of the training modules in Dade, Monroe, and counties served by FDLRS/Gateway
- provision of training for potential instructors and other interested personnel in the 18 FDLRS Associate Center service regions.

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Topics for the eleven training modules, as well as information which provides the basis for the competencies, policy framework, and other products of Project MITCH, were obtained from a literature search, interviews, and letters of inquiry, and needs assessments sent to over 600 persons throughout the State of Florida. The modules were written by several authors from various disciplines, including early childhood education, exceptional student education, nursing, occupational and physical therapy, speech and language, nutrition, and social work. Each module was read by several critical readers and was piloted in both north and south Florida at least three times before final rewriting took place.

The training series emphasizes developmentally appropriate practice and normal development as the means for working with youngsters who have special needs. The eleven three-hour modules that currently make up the series have relevance for caregivers of normally developing children as well as caregivers who may be working with children who are handicapped, experiencing delays, or who may be at-risk. Although several of the modules specifically address normal and abnormal development from birth to 36 months of age, the material is also meaningful to caregivers of preschoolers who are chronologically older but who are functioning developmentally within the birth to three year range.

MITCH MODULES

Eleven MITCH training modules have been developed:

(1) *Intellectual Development: What You Can Do to Help*

(2) *Speech and Language Development: What You Can Do to Help*

(3) *The Child Who Seems Different: Meeting Special Needs*

(4) *Family Functioning: The Impact of a Child with Special Needs*

(5) *Listening and Sensory Integration: What to Do Before Speech and Language Develop*

(6) *The Caregiving Environment: Planning an Effective Program*

(7) *Behavior Management: Preventing and Dealing with Problem Behavior*

(8) *Health Care: Infection Control, Medication Administration, and Seizure Management*

(9) *Motor Development: What You Need to Know*

(10) *Nutrition and Feeding Practices: What You Need to Know*

(11) *Working Together: Communication Skills for Parents, Caregivers, and Other Professionals*

Each of the three-hour modules can be used independently. Although the modules are numbered sequentially, they may be presented in any order since no module provides prerequisite material for another. Each module contains a script for the instructor, activities, references, resource list, and reproducible handouts/overheads. In some cases, a videotape and/or an audiotape and other materials are available to supplement the written material.

MITCH BOOKLETS

Three booklets have also been produced through MITCH. These may be used with modules as indicated or may be used independently. The booklets are listed below:

- A Simple Introduction to Physical and Health Impairments, to be used with Module 3
- Welcome to Our World: An Overview of Your Growing Child, to be used with Modules 1, 2, 3, 6, and 7
- Curricula for Use with High Risk and Handicapped Infants and Toddlers, for use as a supplement to the modules.

User's Guide to Series

INSTRUCTOR

Instructor Qualifications

Unless otherwise stated, the MITCH modules are designed to be presented by qualified and credentialed instructors in fields such as early childhood special education, early childhood education, special education, child development, psychology, and nursing, and Home Economics.

Role of Instructor

Although the modules do contain scripts, the instructor is encouraged to add to them with his own style, personality, anecdotes, information, handouts, references, and resources. It is expected that the instructor will exercise judgement in tailoring the material to the needs, interests, and level of the participants. The best presentations will be those that are specifically designed for the participants by the instructor who best knows their needs.

The instructor may change the lecture/discussion and activity ratio depending upon the group's needs. If all modules are being scheduled for presentation within a relatively short period of time for the same group of participants, the instructor may choose among the activities in order to offer variety since several modules share similar types of activities. The instructor will need to plan adequate time in order to become familiar with the material and tailor it to the needs of each specific audience.

A successful presentation of the material is heavily reliant upon an enthusiastic style on the part of the instructor. Suggestions for achieving this include:

- allow for introductions of participants
- accept and acknowledge interaction from all
- paraphrase questions and responses from the participants loudly enough for all to hear
- create a comfortable atmosphere
- summarize the content of each session before closing.

The audience may include a broad range of persons, including those who knowingly work with very young children with special needs, to others who may have children under their care who have special needs that are not yet recognized. The instructor should assist all caregivers in becoming more comfortable with:

- recognizing indicators that a child may be at-risk or may have special needs
- working with that child
- getting additional support and assistance regarding such a child.

It will be important to emphasize that all children are more like one another than they are different. Keeping children in the most natural or normal environment is a major goal for caregivers.

Instructor Preparation and Follow-Through

Prior to presenting any of the eleven three-hour modules, we recommend that each instructor:

- become entirely familiar with the content and format of presentation
- preview any videotape and/or audiotape
- set date for training
- arrange for a comfortable room in which to present the training
- advertise training in a timely fashion (see reproducible flier in Appendix A)
- arrange for the use of an audiocassette player, VHS videocassette recorder, overhead projector, and screen, as needed
- photocopy all handouts and the List of Participants
- prepare overhead transparencies and/or other materials
- collect any additional materials not provided in this packet (see materials list)

After presenting any of the eleven three-hour modules, the instructor should:

- photocopy the reminder letter for each participant regarding the return of the Six-Week Follow-Up Activity
- mail the reminder letters three to four weeks after presenting the training module
- collect, or have participants mail, the completed Six-Week Follow-Up Activity
- review completed Six-Week Follow-Up Activity for each participant
- photocopy Certificate of Completion
- complete Certificate of Completion
- deliver or mail Certificates of Completion to each participant who successfully completed the Six-Week Follow-Up Activity

- maintain a complete record of persons who have successfully completed the module, using the List of Participants.

Reproducible copies of the Instructor's Time Table, Advertising Flier, List of Participants, Mailer, and Certificate of Completion are in Appendix A.

THE SESSION

Time

This module, if presented as written, is three hours in length. It may be presented in a single three-hour session, with a 15-minute break after one-and-three-quarter hours, or in three one-hour sessions.

Each module contains a five minute time allotment for opening each hour session, and a five minute time allotment for closing each hour session. If a module is being presented in one three-hour session, the instructor should eliminate the closing time allotment from hour one and the opening time allotment for both hours two and three in order to gain 15 minutes to use for the break. The 15-minute break should occur between presentation of the second and third hours of the module.

It is important to start and end each session on time. Estimates of presentation time are written in the left hand margins for specific segments or activities within each hour. However, the instructor may choose to expand on one or more of these segments or activities while shortening others.

Remember that a limited amount of information that is thoroughly presented will be more meaningful for participants than a larger quantity of information that has been inadequately understood by the participants.

Handouts/Overheads

Each training module comes complete with specially designed handouts. Since the modules complement one another, some handouts and booklets are recommended for use with more than one module. Reproducible originals of these materials are included in each of the appropriate modules. The Curricula booklet is available separately. The instructor should monitor and make decisions regarding reproduction and distribution of all handouts. The instructor also should supplement them with others that are appropriate.

When deciding which of the original handouts to reproduce as overhead transparencies, the instructor should choose only those with print large enough to be seen and easily read when projected on a screen. Many of the originals are not suited for use as overhead transparencies.

It is suggested, in a time saving effort, that all handouts be compiled into a single packet and distributed at the beginning of the first hour if the entire three-hour module is being presented, or at the beginning of each one-hour session if the module is being presented in one-hour segments. Only the handouts that will be discussed during the presentation should be reproduced and handed out. Some of the handouts present main points but are designed so that participants can use them for note taking. This should be called to the attention of the participants when appropriate.

MITCH printed materials may be reproduced and used in a manner that best meets the needs of the participants. Reproducible originals of handouts, overheads, and booklets (excluding the Curricula booklet) are in Appendix B of each module.

Videotapes

Videotapes have been chosen to supplement the material of several of the modules. In some cases (Modules 1, 2, 3, 4, 6, 7, 8, and 9). All of the tapes will provide valuable information for the instructor, even if the videotape is not used during presentation of the three-hour module. Therefore, it is important for the instructor to view the tape that is associated with a specific module prior to presenting the module.

The videotapes have not been included in the designated time allotments suggested in each of the module manuals. The instructor may wish to substitute all or a part of a videotape for material written in the module, extend the three-hour time period, show the videotape at another session, or leave the videotape with the participants to watch as follow-up. See the Specific Information section of each module regarding the videotape for that module. Videotapes may not be copied without written consent of the producer. Information for obtaining videotapes is also provided in the Specific Information section.

Audiotapes

Audiotapes are recommended for the presentation of Modules 5 and 7. See the Specific Information section of each of those modules regarding the audiotapes. The audiotape presentations have been built into the designated time allotments suggested in each of the module manuals.

MITCH Theme Music

Included on the reverse side of the two audiotapes, one each in Module 5 and Module 7, is a three-minute segment of the MITCH theme music. The instructor may wish to play this as participants enter the session, as a signal to return from the break, or in any other suitable manner.

Attendance

At the opening session of each three-hour module, participants should sign the List of Participants form (see Appendix A). The instructor should use this form to verify attendance for all three hours of training and completion of the Six-Week Follow-Up Activity.

Six-Week Follow-Up Activity

Three to four weeks after presenting the training module, the instructor, or another person representing the training agency, should contact all participants to remind them to submit their final Six-Week Follow-Up Activity (see Appendix C). This may be done by phone or by mail using the prepared mailer (see Appendix A).

The instructor, or some other qualified person designated by the instructor, should evaluate the quality and content of the performance of the Six-Week Follow-Up Activity by each participant. This may be done by a visit to each participant's place of work or by having each participant mail the completed follow-up activity form to the instructor. The instructor will prepare and give a Certificate of Completion to every participant whose performance meets the instructor's criteria.

Certificate of Completion

Only those participants who attend all three hours of training and who successfully complete the Six-Week Follow-Up Activity are eligible to receive a Certificate of Completion (see Appendix A).

Record of Completion

The instructor should keep the completed List of Participants forms on file in the training agency. Information should be retrievable by the participant's name.

Specific Information for Presenting Module 9

GOALS AND OBJECTIVES

Goal for Hour 1: Participants will gain knowledge of physical therapy and normal motor development of children.

Objective - *Participants will gain an understanding of:*

- the nature of physical therapy
- the role of the physical therapist
- the normal motor developmental sequence from 0 to 36 months
- important activities related to critical motor milestones and automatic movement reactions.

Goal for Hour 2: Participants will gain knowledge of the role of physical therapy in the education of infants and toddlers with special needs.

Objective - *Participants will gain an understanding of:*

- the characteristics of abnormal motor development
- common abnormal movement behavior
- appropriate positioning and handling techniques
- the relationship between abnormal movement and associated disorders.

Goal for Hour 3: Participants will gain knowledge of the role of occupational therapy in the education of special needs infants and toddlers.

Objective - *Participants will gain an understanding of:*

- occupational therapy and the role of the occupational therapist
- the development of the normal grasp pattern
- the development of normal fine motor coordination
- some problems encountered in fine motor development.

OTHER RECOMMENDED INSTRUCTORS

Because of the nature of the content of this specific three-hour module, the training agency presenting this module may wish to contact other specialized persons within its local area who are willing to perform this duty, such as:

- physical therapists
- occupational therapists
- registered nurses
- physicians.

CONTACT LIST

Persons to contact if the instructor has questions regarding this module include:

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EQUIPMENT, MATERIALS, AND SUPPLIES

Equipment

This module can be enhanced with the equipment listed below:

- VHS videocassette recorder and monitor - if videotape is to be used

- overhead projector
- projection screen or alternative
- audiocassette recorder.

Supplies

The instructor should also have the following supplies available:

- chalk
- crayons or markers
- overhead (transparency) pens
- chart paper
- extension cord
- 3 prong/2 prong adapter plug
- masking tape
- transparent tape
- thumb tacks
- extra batteries
- extra pencils for participants.

Materials Contained in This Manual

The following materials are contained in this manual:

- reproducible forms (Appendix A)
- reproducible handouts/overheads and booklets (Appendix B)
- reproducible Six-Week Follow-Up Activity forms (Appendix C).

Videotape

The videotape, Motor Development was selected to complement this module. Use of this videotape is optional for this module. The videotape is 35 minutes in length.

Helen Masin, Director of Physical Therapy at the Mailman Center for child Development, narrates during physical therapy sessions with three different toddlers. Normal and abnormal movement patterns and appropriate lifting and carrying techniques are demonstrated. Therapists also act out obligatory movement patterns most comnmonly seen in children who have cerebral palsy, and the sequence of the normal grasp pattern. It may be very important to show parts of this tape during the presentation of Hour 2 especially if the instructor is unsure of how to demonstrate these patterns. The instructor should note that in the videotape cerebral palsy is referred to as "weak brain," point out to participants that this is the literal translation of cerebral palsy. It does not mean mental retardation.

A copy of this videotape may be borrowed from the Clearinghouse/Information Center, Bureau of Education for Exceptional Students, Florida Department of Education, 622

Florida Education Center, Tallahassee, FL 32399-0400; phone (904) 488-1879, Suncom 278-1879, or from local FDLRS Associate Center. A copy may be purchased from DC/TATS MEDIA Frank Porter Graham Child Development Center, University of North Carolina at Chapel Hill, CB 8040, 300 NCNB Plaza, Chapel Hill, NC 27599-8040; phone (919) 962-7358.

Materials Not Contained in This Manual

In order to present this specific three-hour module, the following materials, which are not included in the packet, need to be obtained by the instructor:

- blankets, beach towels, or floor mats - one for each participant (Hours 1 and 2)
- 8 to 10 small blocks or cubes (Hour 1)
- rattle (Hour 1)
- activity bags - the number will vary depending upon the number of participants. See activity description on next page for instruction of how to make the activity bags (Hour 3)
- Dycem and an example of an adaptive spoon (Hour 3). These items are available on loan through the Clearinghouse/Information Center, see section on videotape, above.

Note: **Participants should be instructed, prior to attending Hours 1 and 2, to wear clothes that allow for easy movement on the floor, such as slacks or shorts.**

Bag of Textures

Instructor should make as many Bags of Textures as necessary so that each sub-group of three to five participants can share one bag.

Directions:

Place a variety of different textured objects (5 or 6) in an opaque paper or cloth bag. Some suggestions include:

- sandpaper
- a marble
- a piece of fake fur
- a piece of Play-Doh or clay
- a piece of masking tape wadded up so some of the sticky part is on the outside
- a leaf
- a piece of ceramic tile
- a piece of broken clay flower pot
- a small sharp pencil
- velvet
- a cork
- a piece of window screen
- a piece of carpet/plastic 'grass'.

Module	Hour	Activity
9	3	1a

Module 9

MOTOR DEVELOPMENT: What You Need to Know

Hour 1

Goal: PARTICIPANTS WILL GAIN KNOWLEDGE OF PHYSICAL THERAPY AND NORMAL MOTOR DEVELOPMENT OF CHILDREN

Objectives - ***Participants will gain an understanding of:***

- the nature of physical therapy
- the role of the physical therapist
- the normal motor developmental sequence from 0 to 36 months
- important activites related to critical motor milestones and automatic movement reactions.

5 minutes **GREETING, SIGN IN, AND DISTRIBUTION OF HANDOUTS**

SESSION BEGINS

10 minutes **LECTURE/DISCUSSION: Introduction**

Say: During the first two hours of this training module, we will be talking primarily about gross motor development, which involves the large muscles of the body. Physical therapists work in this domain. During the third hour of the module, we will talk about fine motor, or small muscle development, and the role of the occupational therapist.

Ask: How many of you have ever received physical therapy?

When the participants respond, use the flipchart or chalkboard to record their responses.

Ask: What kind of activities did you do when you received physical therapy?

Instructor summarizes responses to include:

- strengthening
- stretching
- functional improvement from the injury
- better awareness of prevention of further injury
- relief of pain
- positioning.

Say: Let's write another list based on what kind of things you think a physical therapist might do for children. Name activities in physical therapy that you may have seen the physical therapists in your setting do, or that you think physical therapists do with children.

Instructor summarizes, being sure to include:

- strengthening

- stretching
- increasing functional use of the body
- working on normal developmental positions and movements.

As: What similarities and/or differences do you notice between the two lists?

Instructor leads discussion to include:

- Physical therapy for children involves developmental play and emphasis on the development of normal positions and movements.
- Physical therapy for adults utilizes different technological appliances as well as manual exercise and therapeutic handling techniques, largely for rehabilitative purposes and to relieve pain.

Ask: What might a physical therapist teach a child to do in a preschool setting?

Instructor leads discussion to include:

- sitting
- standing
- walking.

Ask: What do you think the basis for physical therapy treatment in children might be?

Instructor leads discussion to stress concept of habilitation. Include:

- facilitate normal development
- do normal patterns of movement
- inhibit poor posture
- interfere with and position against abnormal reflex patterns.

**Handout/
Overhead
9-1-1**

Say: As we go further into this hour I may use some terms that are new and different to you. Please refer to Handout/Overhead 9-1-1 which contains definitions of these terms.

Instructor should take time to point out and discuss, as necessary, the terms on **Handout/Overhead 9-1-1** as appropriate.

Ask: How many of you have children of your own?

Say: Tell us about the physical movement or the developmental sequence you have observed in your children from birth to one year of age.

Move to flipchart or chalkboard and identify some of the important motor skills that the participants recognize in their own children. Begin a list on the flipchart or chalkboard which describes the activities. These might include:

- lifting the head
- rolling over
- sitting up
- creeping on hands and knees
- pulling to stand
- cruising or walking by holding onto furniture
- taking steps independently.

Ask: Which of these listed skills is most important to a preschool child?

Correct response: All of them.

Say: A child's movement begins at the time the child is in the mother's womb. The child moves during the pregnancy after about ten weeks when the limbs are formed. This forms the basis for movement that will occur once the child is born. The movement is very important for preparing the child for functioning in the environment. The development of normal movement follows a definite sequence or order. In this module we will be talking about what this sequence is. We will also talk about how it affects the child's development in the environment. We will be asking you to practice the movements which are basic to a child's development.

Ask: What do the movements of a newborn baby look like?

Record responses on the flipchart or chalkboard. Correct responses include:

- jerky
- unsteady
- tentative
- uncontrolled.

Say: Now we are going to practice the movement sequence that is appropriate for a normally developing infant. However, a very important fact to remember is that the age levels we give for each movement are approximate. What one child will do at four months, another child may not be able to do until four and a half months. Another child may do those things as early as three months. All children normally go through all stages of growth in the same order but the rate they go through them may vary from child to child.

There are four major characteristics which are important to remember regarding the normal motor sequence. You may want to take notes about these on your handout.

Handout/ Overhead 9-1-2

Instructor refers to **Handout/Overhead 9-1-2**.

Normal development occurs against a background of normal muscle tone. Muscle tone is the background resting state of the muscles. This background muscle tone provides a basis for posture and movement on a moment to moment basis. The best way to learn about normal muscle tone is to handle normal infants. Those of you who have had babies of your own know how they feel when you hold them in your arms or change their position in space.

A second important thing to know about normal movement development is that the newborn baby learns how to move better against gravity as the baby's central nervous system develops. The normal newborn baby has a posture of flexion. Flexion is a posture of bending at the joints. As the baby learns to control the joints, the baby learns how to straighten the joints against gravity. This ability to bend and straighten the muscles against gravity is what enables the child to move in space.

For the child who has movement problems the ability to move against gravity is diminished or lessened. Once the child changes from a pattern of primarily flexion, the baby is able to move in a pattern of primarily extension. This allows the baby to pull against gravity in moving to upright positions.

Once the baby has mastered the balance of flexion and extension, the baby begins to learn the ability to rotate or twist. The ability to rotate or twist allows the child to make a transition from one position to another. This is a very important developmental step and permits children to interact in their environment.

A third characteristic of normal motor development is that movement develops from the head to the feet. The child first must have control and strength in the head and upper body before the child gets strength in the trunk and lower body. The child first uses the arms for bearing weight and eventually uses the legs for bearing weight.

A fourth characteristic of normal movement development is that primitive reflexes gradually diminish or go away as postural or automatic righting and equilibrium reactions develop. We will be discussing primitive reflexes in the second hour when we talk about abnormal movement characteristics.

Are there any questions?

Say: Now that you understand the basic sequence of the development of movement, I would like to have everyone find a space on the floor and lie comfortably on their back.

Instructor allows time for participants to put down mats, blankets, or towels and to lie down before continuing.

Say: In a moment we are going to experience the normal motor developmental sequence in our own bodies. Until then relax and listen to what I say.

It is important to recognize that the normal sequence will be different in an adult body than it is in a newborn's body. However, the experience of moving in space will help you to understand how handicapped infants and developing children move through space.

We are going to practice the normal developmental sequence from birth to 36 months. Please remember that the age ranges that we will be talking about are only approximate. The important point is that the milestones we are talking about normally occur on a continum. They are sequential. A child normally does not achieve a higher level skill until lower level skills are achieved. The actual age the child achieves a specific skill can vary widely.

We will also practice activities that are related to important motor milestones and to automatic movement reactions.

These include:

- head righting or holding the head upright
- trunk righting or holding the body upright
- protective reactions
- equilibrium reactions or balancing reactions.

Say: The benefits of this session to you are:

- You will be able to recognize your own movement abilities. You will also recognize your movement limitations as they affect your work with infants/toddlers.
- You will be able to recognize the developmental sequence of a normal infant.
- You will be able to recognize the importance of automatic movement reactions as they relate to movement in space.

30 minutes **ACTIVITY: Normal Motor Growth**

Say: This segment will provide everyone a chance to experience their own movement from infancy through 36 months of age. As we go through the movements, please notice the weight bearing surfaces on your own body, such as face, arms, and hands. Also notice the flexibility, or lack of flexibility, in your own body. That is how easily you can, or can't bend. And, notice the changes in tone or tightness of muscles in your own body based on your own change of position in space.

As you are experiencing movement in space, be aware that you are able to control your movement on your own. This will be an important concept to recognize when working with handicapped children. They have less control over their own movement which makes it very difficult for them to get a sense of control over their environment.

Also, as we go through these movements, think of some of the infants and toddlers you know. You may recognize some of the movements we do as typical of these children. This may give you an idea about their level of motor development.

Instructor describes movement activities and encourages all participants to experience and practice each movement. Instructor may also demonstrate with rattle and cubes, and by acting as "mother" (see below).

Newborn

Say: As a newborn infant, your body is primarily characterized by having physiological flexion patterns. Will everyone please roll into a ball on your back with your arms and legs close to your chest. Notice the weight bearing surfaces of your body while you are in this position.

Now, everyone roll to your stomach but keep your arms and legs tucked underneath your body. Notice the weight bearing surfaces of your hands and face as you lie on your stomach with your legs and arms bent underneath you.

Now, attempt to lift your head from this position. What do you notice? This is the experience that a newborn infant might feel when lying on the tummy. How much control do you have over your environment?

4 week old

Say: You are now a four week old infant. Lie on your back and look up toward the ceiling. You notice a ring or rattle that your mother dangles in front of your face. With your eyes, you are able to follow the ring to your midline but not beyond. You still keep your hands fisted.

If your mother moves you onto a tummy lying position you will now be able to turn your head from side to side and lift your head briefly. When your mother pulls you to sit at four weeks, your head is unable to pull up, so your head drops back as you are pulled to sit and then sags forward as you come to sit.

8 weeks old

Say: Now, we are going to experience development at the eight week level. Again, you must lie on your back. Keeping your head positioned in the middle or at midline. You are now able to follow a rattle with your eyes as it moves from the left side of your body to the right or crosses midline. You will be able to follow a rattle which is moved past the midline of your body with your eyes.

Now, your mother has positioned you on your tummy; your legs are tucked up under you. You are able to lift your head about half way off the mat. Your hips are slowly getting closer to the mat. When your mother holds you in a supported sitting position your head can bounce to an erect position, occasionally.

4 months old

Say: Now we will go from almost two months, or eight weeks, to four months of age. At four months, when you lie on your back, you show a spontaneous smile. You even laugh out loud. If your mother presents a rattle, you will move your arms and also take your hands to your mouth. You may be able to hold a rattle in your hand.

If your mother puts you on your tummy, you will now be able to lift your head to a vertical or upright position. You will be able to maintain your balance on your tummy with one arm bent and one arm straight. You will begin to be able to roll from your tummy to your back. You will now be able to maintain your head steadily if you are held or supported by your mother.

6 months old

Say: Now, we will experience what a six month old feels. If you are lying on your back, you will reach for your feet and grasp them with your hands. If your mother gives you a rattle, you will reach for the rattle with two hands and grasp it. You will also shake the rattle and make noises.

If your mother pulls you up into a sitting position you will help her with your arms when she lifts you to sit. You will now be able to sit while leaning on your hands. If your mother puts you in a standing position, you will bounce up and down.

Remember, as we go through these movements, try to think of children you know who may be at these stages, especially if you are working with children who have special needs. Some children who are delayed may be at these levels of motor development even though they are older chronologically.

8 months old

Say: Let's see how we move at eight months of age. Now you are getting much better control over gravity. You can sit for up to 10 minutes at a time. You can lean forward and correct your posture. You can hold onto a rail or chair and bear full weight on your legs in a standing position.

9 months old

Say: At nine months of age, you are able to creep on the floor on your hands and knees. You can go from your tummy to a sitting position by yourself. You can pull yourself to your feet at a rail and can lift your feet at a crib rail.

Ask: How many of you know youngsters that do not yet creep? Remember, these children may be below the nine month developmental level in motor development.

10 months old

Say: Let's see how we do at 10 months of age. You are able to cruise along furniture, using two hands when standing. This means that you can step sideways as long as you have furniture in front of you. If you are standing at a piece of furniture you can reach the floor to get a toy. If you are standing, you can control your movement into a sitting position, you can let yourself down from a standing to a sitting position with control.

12 months old

Say: You are now 12 months of age. You are able to pick objects up from the floor, get up and down independently, and take several steps. You can creep on your hands and knees on the steps and toss a ball. You can now release cubes into a cup. You can imitate scribbling.

Instructor may wish to use a question/answer technique at times with material presented below in order to sustain involvement. Ask participants if they know what children will do at certain ages. Continue with demonstrations also.

15 months old

Say: At 15 months of age, you are able to walk alone without frequently falling. You are able to walk fast and run swiftly. You can walk up stairs with one hand held and creep down stairs on your hands and knees. You are able to throw a ball and can build a tower of three cubes. When given a crayon you can spontaneously scribble.

18 months old

Say: You are now 18 months of age. You can walk down stairs with one hand held. You can build a tower of four cubes. You can imitate stroking with the crayon and turn two or three pages of a book.

21 months old

Say: At 21 months of age, you are able to run well. You can walk upstairs holding a rail in a step-to-step fashion. This means putting both feet on each step. You can also walk down stairs holding a rail using a step-to-step fashion. You can build a tower of six cubes or align three blocks for a train.

24 months old

Say: You are now 24 months or two years old. You can jump with both feet off the floor. You try to stand on one foot without holding on. You can push a toy with good steering. You can help put things away and can carry breakable objects without dropping them. You can build a tower of seven cubes and align four cubes for a train. You can now imitate a circular scribble and draw vertical strokes.

30 months old

Say: At 30 months of age, you are able to alternate feet going up and down stairs without holding the rail. You can ride a tricycle using pedals. You can stand on one foot with momentary balance. You can build a tower of nine cubes.

You can turn the individual pages of a book. You can imitate a horizontal stroke and a circle.

36 months old

Say: You are now 36 months, or three years, of age. This is the oldest age of the toddler that we will be talking about. At this stage, you can go up and down stairs using alternating feet, without holding onto the rail. You can jump a short distance with both feet together at the same time. You can stand on one foot for two seconds. You can throw a ball overhanded. You are also able to build a tower of ten blocks, imitate building a three cube bridge, and copy various strokes including horizontal, vertical, circle, and cross.

Instructor demonstrates three cube bridge and writing strokes.

Say: Okay! You all grew up beautifully! I hope you have a better understanding of how a child develops motor skills. Remember, what we have just experienced is the normal order, or sequence of growth, that infants go through. The age levels we gave are approximate. What one child will do at four months, another child won't be able to do until four and a half months. A third child may do those same things at three and a half months. Normally children go through all of these stages of growth in the same order. But, the rate that they go through them may vary from child to child.

Remember, too, that some children may skip some movements. For example, there are some perfectly normal children who never creep, and others who never crawl. However, we have just gone through the normal stages that most children go through. Normal movement levels are given in the booklet entitled *Welcome to the World*.

Handout/ Overhead 9-1-3

Instructor refers to **Handout/Overhead 9-1-3**.

Say: You can also find checklists giving normal motor milestones in other books that talk about normal developmental growth. Again, remember that the age at which a child may achieve a specific motor skill may vary considerably from the age another child may achieve that same skill. Yet both children may be within the range of normal. You must think of age levels as estimates.

In the second hour of our module, we will talk about how some children differ in the growth of their motor skills.

10 minutes

ACTIVITY: Postural Reflexes

Say: In addition to the understanding of a child's physical development from birth to 36 months, it is very important to learn about a group of responses which are called postural reflexes. These reflexes are very important in helping the child develop movement against gravity. These postural reflexes begin to appear several months after birth and continue their development through the first five years of life. These reflexes last throughout life providing an automatic support for voluntary actions. They can be grouped according to their function:

- righting
- tilting
- protective reactions.

For this next laboratory experience, I will ask you to recognize and demonstrate the righting reflexes, the tilting reflexes, and the protective reflexes that all of you possess and use throughout your daily lives.

Righting Reactions

Say: First, we are going to practice righting reactions. I want you to pair up with a partner in the group while you are sitting on the floor. Your partner is going to hold you at the shoulders and tilt you forward or sideways.

Give participants time to practice and exchange places with partner.

Say: Watch what happens to your head when someone tilts you to the side and to the front. This response is very important in enabling you to develop the first phase of control of your head.

A child who has control of the head righting reflex, has greater freedom to visually explore the environment. Hold your head stiff, without righting it. Now right it. Look how much more you can see when you right your head.

You will know that you are using your head righting reflex whenever you orient your head so that your eyes are horizontal and your nose is vertical. As adults, we use our righting reaction everyday. When you are getting out of bed in the morning, you use a righting reaction to help you orient yourself in space as you go from lying on your back to sitting up, and eventually, to standing. This response is very important in the ability of the infant to learn to control the body. Since the beginning of control starts of the head, this righting reaction of the head is very important for the development of later motor skills.

Tilting Reactions

Say: We will now practice tilting reactions. Tilting reactions enable the child to keep balance while moving in space. When a child is placed on a ball and the ball is shifted, the child will demonstrate a tilting reaction which will be seen by a curve in the child's body. The body curves away from the direction of the tilt so that balance is maintained. These tilting reactions can be seen when the child is lying on the back, on the tummy, on all fours, sitting, and standing. These reactions are very important in relation to the child's learning good motor progression. Practice this with your partner. Sit on a chair, have your partner tip your chair to the back or side. What happens to your body? Take turns. This is the beginning of rotational movement which is very important for good balance.

Protective Extension Reactions

Say: Finally let's practice protective extension reactions. These reactions are sometimes called parachute reactions. They are automatic movements of the arms and legs that persons use to catch oneself once one's balance has been lost. Examples of these reactions can be seen if you pair with a partner for these activities. One partner sits on the floor, and the other sits behind and gently pushes the first partner to the side. As your partner is shifted to the side, the hand comes out to protect that person from falling.

These reactions can also be seen if the person is walking and suddenly moves forward. The hands are quickly brought forward so the weight is taken on the hands to protect the face.

The last reaction to develop is the protective extension to the back. This is seen when the person is in the sitting position and is pushed quickly back at the shoulder. The person would respond by straightening the arms behind the back to maintain balance.

These reactions are essential to achieving independent voluntary motor control. This experience will help you to understand some of the problems that you may see with multihandicapped infants and toddlers, or those who have physical problems. The reason that they have trouble with these activities is that they don't have the righting, tilting, and/or protective reactions necessary to get the best control over their movement patterns.

5 minutes **Summary**

Say: This module has attempted to give you a better understanding of movement through space by having you actually move through space. By experiencing or feeling a movement pattern, you are learning just as a child learns. A child moves through space. This enables children to develop a skill which requires them to repeat these movements in space. This is called motor planning.

Since you are adults who are functioning independently, you no longer need to plan motor behaviors such as sitting, standing, and walking. However, if you were to learn a new sport, such as tennis or baseball, you would go through a period of motor planning while learning the skill. You would have to do this in order to achieve better control over your movement in the sport.

We hope that this past hour has given you an opportunity to recognize not only your own physical strengths and weaknesses, but also, to be more sensitive to the strengths and weaknesses of the infants and toddlers with whom you work. This concludes the first hour of our module. Are there any questions?

5 minutes
(omit if 3-hour presentation) **END OF HOUR 1: Closing**

Module 9

MOTOR DEVELOPMENT: What You Need to Know

Hour 2

Goal: PARTICIPANTS WILL GAIN KNOWLEDGE OF THE ROLE OF PHYSICAL THERAPY IN THE EDUCATION OF INFANTS AND TODDLERS WITH SPECIAL NEEDS

Objectives - ***Participants will gain an understanding of:***

- the characteristics of abnormal motor development
- common abnormal movement behavior
- appropriate positioning and handling techniques
- the relationship between abnormal movement and associated disorders.

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5 minutes
(omit if 3-hour presentation) **GREETING, SIGN IN, AND DISTRIBUTION OF HANDOUTS**

SESSION BEGINS

5 minutes **LECTURE/DISCUSSION:** **Introduction**

Say: How many of you have worked with children with cerebral palsy?

How many of you have worked with children with Down syndrome?

How many of you have worked with children with Spina Bifida?

How many of you have worked with children who were in accidents?

How many of you have worked with children with severe illness?

What is a common thing that happens to children with any of the above listed diseases or disorders?

Instructor encourages discussion, accepts responses, and continues.

Say: Many of the children identified above have a common problem of abnormal or unusual movement. Abnormal movements can be caused by many things. Some of these include prematurity, genetic disorders, birth trauma, and severe illnesses. Each child with these problems has difficulties of movement in space. We will discuss some of the more common problems today. Among these are:

- abnormal muscle tone
- abnormal reflex activity
- delay in the development of motor skills or abnormal performance of motor skills
- associated disorders.

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Included in the associated disorders are additional impairments which can cause children to move with greater difficulty. Among these are seizure disorders which are fairly common. Vision disorders and hearing disorders can also occur. When these deficits accompany abnormal movement it makes it more difficult for a child to learn effective movement in space.

During this session:

- We will discuss the characteristics of abnormal motor development.
- We will experience common abnormal movement behaviors.
- We will discuss appropriate positioning and handling techniques to assist children in overcoming their abnormal movement.
- We will discuss the relationship between abnormal movement and associated disorders.

We don't expect that you will go back to your caregiving setting and become a physical therapist. However, after going through this next hour of training:

- You will be able to recognize normal and, if present, abnormal movement in the children you care for.
- You will be able to understand your own body mechanics.
- You will know more about proper handling and positioning of the handicapped child
- You will know more about adaptive equipment, and using good body movements yourself.
- You will know to call in a physical therapist to consult and work with you and with any children who may need the service of a physical therapist.

Let's begin by talking about some of the characteristics of abnormal motor development. First, we'll discuss abnormal muscle tone. You may want to take nots on your handout.

Handout/ Overhead 9-2-1

Instructor refers to Handout/Overhead 9-2-1.

Say: Children with abnormal muscle tone may have a diagnosis of cerebral palsy or developmental delay. Cerebral palsy means the child has a neurological, or nerve, impairment. Children with cerebral palsy may be mildly, moderately, or severely involved.

The amount of resistance you feel when you bend or straighten the arm of a normal person is due to muscle tone. Abnormal muscle tone can be decreased or increased, or it can present variable resistance to movement as compared to normal muscle tone. The muscles of a normal person should feel approximately the same throughout the body.

Abnormal muscle tone can be described in terms of three factors. These are: the type of abnormal muscle tone, the distribution of the abnormal muscle tone, and the severity of the abnormalty in muscle tone. When you are working with therapists in the classroom setting, they may refer to a child as having a specific kind of cerebral palsy such as spastic diplegia. They also may say that the child has a mild, moderate, or severe type of cerebral palsy. These terms describe the muscle tone and also the abnormal reflex development that prevents the child from moving well.

5 minutes **ACTIVITY: Muscle Tone**

Say: Get together with a partner. Now, move the partner's arm through a bending and straightening of the elbow. How does it feel? What do you notice? Now ask the partner to strongly resist the movement of bending and straightening the arm. What do you notice? How does it feel? This increased resistance to movement is somewhat like what is experienced in a spastic or a high tone child.

Now, ask your partner to pretend to be a floppy rag doll. Move your partner's arm through space. What do you notice? How does it feel?

Some children with cerebral palsy have low muscle tone or floppy muscle tone like this.

Now, pretend that your partner cannot bend and straighten the arm. When your partner attempts to bend the arm in towards the chest, the arm turns around so the palm faces the ceiling. The children with athetoid type of cerebral palsy have the same type of problem. They constantly are moving. They demonstrate a variable tone which is characteristic of an athetoid cerebral palsy.

This type of cerebral palsy is not seen as frequently as the low tone or the high tone type of cerebral palsy. However, it is one of the types of abnormal tone which you may see in children with whom you work.

10 minutes

LECTURE/DISCUSSION: Abnormal Movement and Abnormal Reflex Activity

Say: Children who have abnormal muscle tone can have mild, moderate, or severe involvement. A child with mild involvement often achieves motor milestones at a slightly delayed rate as compared to peers with noraml tone.

Children with moderate involvement often achieve motor skills at a considerably delayed rate as compared to peers with normal tone. They may require special appliances such as walkers, crutches, or braces.

Children with severe involvement often do not achieve normal motor skills. They may not walk by themselves and may have little spontaneous movement. Due to their abnormal movement, they must be monitored regularly by their therapists to prevent development of orthopedic deformities.

Say: Another characteristic of abnormal motor development is abnormal reflex activity. Children with cerebral palsy often have different patterns of reflexive development. Reflexes that normally disappear by six months of age in a normal child may last throughout the life of a child with cerebral palsy. These reflexes prevent the child from learning the motor activities that we described in Hour 1. Some of these reflexes will be described in this session. Don't worry about remembering the specific names. They are on your handout. However, listen to the descriptions and see if you recognize any of these patterns in any children you know.

Note: These reflexes are demonstrated on the videotape that accompanies this module. If video equipment is not available for presentation of the module, the trainer should view the videotape prior to presenting the module, in order to demonstrate the obligatory reflexes that are shown on the tape.

Moro Reflex

Say: This reflex is one that causes a child's arms to move in a startle response when a child experiences a sudden noise, movement, or visual stimulus. This reflex can be strong in severely involved children. They may not be able to overcome this reflex to protect themselves from falling.

Asymmetrical Tonic Neck Reflex (ATNR)

Say: This normal reflex occurs when one turns the child's head to one side. This makes the arm and leg straighten on the chin side and bend on the skull side. If the ATNR persists, the reflex prevents the child from mouthing the hand or objects when the head is turned. This makes it very difficult for the child to explore the environment.

Symmetrical Tonic Neck Reflex (STNR)

Say: Symmetrical tonic neck reflex is normal in infants. If it persists it interferes with the child's moving the arms independently from the head. When the child bends the head toward the chest, the arms will bend. When the child straightens the head the arms will straighten. This makes movement very difficult for the child. The youngster will be unable to shift weight from side to side, which is a necessary skill to enable the child to crawl or walk. As a result, a child with this reflex will "bunny hop" instead.

Hand Grasp Reflex

Say: This reflex is caused by touching the child's hand in the palm. Children who have not integrated this reflex have difficulty releasing their hand once they get their hand around an object. This will make it extremely difficult for the child to play with more than one object because they are unable to release an object in order to pick up another one.

Foot Grasp Reflex

Say: If this normal reflex persists beyond infancy, it makes it more difficult for a child to learn to stand up independently. When a child has this abnormal reflex, the toes curl and the child has difficulty maintaining standing balance.

Tonic Labyrinthine Reflex

Say: This reflex affects the child's movement when the child is lying on the stomach or on the back. When the child is on the back, the legs and arms tend to get very stiff and tend to press into the floor. When the child is on the stomach, the arms and legs tend to bend and the child has difficulty lifting the head from the floor. This reflex is frequently seen in children who have other primitive non-voluntary reflexes.

10 minutes **LECTURE/DISCUSSION: Types of Cerebral Palsy**

Say: Let's take some time now to review different types of cerebral palsy. We'll talk about the various reflex patterns youngsters display who have different types of cerebral palsy. You may wish to continue to refer to and take notes on your handout.

Handout/ Overhead 9-2-1

Instructor refers to **Handout/Overhead 9-2-1**.

Hypotonic Cerebral Palsy

Say: The hypotonic cerebral palsied child has decreased muscle tone. Generally the whole body is involved. The child's movements are fairly normal but the child has difficulty in achieving good stability in the body. This child is frequently described as a floppy child. The child tends to move very much like a rag doll. This child may also develop increased muscle tone or athetoid movement patterns. Athetoid

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movement patterns are those with high and low tone with rotatory, or twisting movements.

Spastic Cerebral Palsy

Say: The spastic cerebral palsied child has increased muscle tone, or increased resistance to movement. The child's movements are carried out with minimal spontaneous patterns. The child tends to be stiff and tends to be restricted in movement patterns. The child may have increased tone in a variety of parts of the body.

There are three commonly used terms associated with spastic cerebral palsy. They are hemiplegia, quadriplegia, and diplegia.

If the child has involvement on only one side of the body, this child is said to have hemiplegic cerebral palsy.

If [illegible] ext[illegible] des[illegible]

If [illegible] ext[illegible] fou[illegible] mor[illegible] chi[illegible] spastic diplegia.

Athetoid Cerebral Palsy

Say: If a child has tone that changes from low to high, the child has athetoid cerebral palsy. In this child, the movements are large and difficult to manage. Head control, speech, and oral motor control are very delayed. These children tend to have strong rotatory patterns when reaching for objects. That means as they reach their hands and arms tend to rotate in a circular motion making it difficult for them to grasp. Generally the entire body is involved.

Ataxic Cerebral Palsy

Say: The ataxic child has normal or slightly decreased muscle tone. The child may have good movements in supported positions but would look wobbly in a sitting or standing position. The child may stumble a lot and may look very clumsy. Generally the whole body is involved in ataxic cerebral palsy.

15 minutes **LECTURE/DISCUSSION: Poor Quality of Movement/Associated Disorders/Intervention**

Say: Due to the effects of low muscle tone and abnormal reflexes, the child with abnormal movement frequently has poor quality of movement. A physical therapist and an occupational therapist can help you to identify ways in which you can improve the quality of [illegible]

[illegible] and hearing problems.

Seizure Disorder

Say: Seizure disorders are fairly common in children with movement disorders. These children may show a jerking movement of the arms and legs, and a sudden loss of muscle tone, or they may appear to lose contact with the environment. It is important to know which children have seizure disorders because seizures may occur when you are working with the children. When a child has a seizure, you must use seizure precautions to maintain the child's safety (and prevent the child from injuring himself). MITCH Module #8, entitled Health Care, deals with this topic. You can also learn about seizure disorders through the United Cerebral Palsy Association, the Epilepsy Foundation, nurses, or hospitals.

Visual Problems

Say: Visual problems are encountered in the child with abnormal movement. These children may have crossed eyes (strabismus) or eyes that constantly move back and forth (nystagmus). These problems make it difficult for the child to look at you or to play with objects.

Another thing that you may see with these children is cortical blindness. This occurs when the eye appears to be intact but the interpretation center in the brain is damaged. These children cannot visually interact with [illegible]

[illegible]

Hearing Problems

Say: Hearing problems can also be found in the child with abnormal movement. A hearing loss may prevent children from hearing your instructions. It is important to know if a child has a hearing loss in order to interact in a meaningful way with the child. If the child has such a loss, you need to use a visual toy and make sure that you get the child's attention by looking at the child or touching the child when you want to communicate.

Say: We have talked about abnormal movement or motor development. Before we end this hour, let's talk about intervention, or ways to work with children who have motor problems.

First, when working with children with abnormal movement, you must remember to plan activities that they are capable of doing with success. This means that you will need to work with the therapist to determine what level of activities are appropriate for the child in your class. It is important to use play as the means of practicing the more normal movement patterns. Since children respond to toys, rather than to instruction, it is important that you ask the child to grab the toy or kick the ball in order to get them to practice their movement exercises.

Second, one way children learn activities is [illegible] allow the child to practice the activity over and over until they tire of doing it.

Third, the help that you give a child in your care is very important. Some children need help with how they sit and stand. Other children need help guiding their movements. For each child with which you work, you must recognize the child's particular needs. The therapist can help by giving you suggestions on how to assist the child in the classroom.

Say: If a child is very spastic, or has high muscle tone, it is very important not to pull against the child's tightness. This tends to increase the tightness. Good methods for relaxation are slow, rhythmical kinds of movements accompanied by slow rhythmical singing.

For low tone, floppy children or children with Down syndrome, you can help the children by making sure that you assist them in correcting their posture and using more vigorous kinds of activities and fast-paced singing.

Fourth, positioning the child is important. The purpose of positioning a child in adaptive equipment is to give the child the best postural alignment to perform a particular activity. This positioning also prevents the shortening of the muscles. Children who have increased muscle tone, or spasticity, are at greater risk for developing tight muscles. Therefore, it is very important that children assume a variety of positions throughout the day to help them maintain the length of their muscles. Children who are unable to stand independently may be placed in standing equipment. Some of the more common pieces of classroom equipment are shown on Handout/Overhead 9-2-2. The travel chair also appears in the videotape which accompanies this module.

Handout/
Overhead
9-2-2

Instructor may use **Handout/Overhead 9-2-2** to discuss:

- The corner chair has an abductor wedge which prevents the child's legs from scissoring. A strap holds the child's hips back, and the chair back keeps the child's shoulders flexed and inhibits extension.
- The travel chair also utilizes a strap to hold the child's hips back. The child's feet are supported while sitting in the travel chair. An optional chest harness and hip bolster can be used to help maintain body alignment. Travel chairs are adjustable to meet the unique needs of each child.
- A supine stander is used with children who have spastic cerebral palsy and whose muscles pull them inward. It helps reduce abnormal reflex patterns and improve the child's tone.

- A prone stander assists children who have increased extensor tone. In the prone stander the child is positioned so that the shoulders come forward.
- A bolster chair has a wedge which abducts the child's legs and prevents the legs from scissoring. A strap gives hip support. A bolster chair is used to help the child establish good tone while allowing the child to maintain free use of the hands.
- The ultra adjustable chair has the same features as the travel chair described above. This chair is stationary and cannot be moved.
- The sidelying positioner breaks up the asymmetrical atonic neck reflex (ATNR) and allows the child to bring the hands together at midline.
- A wheelchair is heavier and larger than the travel chair.
- A tricycle can be adapted for a handicapped child by placing straps on the pedals. Other adaptations may include installing special handlebars, a hip strap, and a back support. A tricycle provides the child with an opportunity to practice rotary leg/hip motion.
- A wedge helps provide the child with proper head positioning and greater freedom of arm movements. It also helps prevent the inward pull of the muscles.

Safety Considerations

Say: When using an adaptive appliance, or special equipment, the caretaker must know how to remove the child carefully from the equipment in case of an emergency. This is especially important when the child is being positioned for feeding and eating. The caretaker must be familiar with the safety precautions for any adaptive appliance used in the classroom. All persons must have training in using this equipment if working with a child who uses it. A therapist can show and tell you how equipment can safely be used.

**Handout/
Overhead
9-2-3**

Instructor refers to **Handout/Overhead 9-2-3**.

Say: I'd like to tell you about two abnormal postures commonly seen in children with cerebral palsy. The first is W-sitting. This position is seen in children with poor trunk control and abnormal muscle tone. The child may use this position to get better stability. This position should be discouraged . The therapist in the classroom can help you to teach the child how to correct this position.

The second position which is very abnormal is the extensor pattern in the supine position where the child is on the back and uses the head to propel backward. The therapist can explain to you how this position can be changed so that a child does not push itself backward in an arched position using the head to stabilize.

When working with children who have cerebral palsy, it is very important to first check with the physical therapist. Check with the physical therapist to determine what types of activities are most appropriate for the child in the classroom. Ask the physical therapist when you have a question about whether or not a child should use a walker or any kind of special adaptive appliance. In general, therapists do not recommend infant walkers for children with abnormal movement patterns. These walkers tend to cause the child to develop increasingly abnormal movement patterns. Parents will frequently ask the therapist if they can use an infant walker at home.

Another precaution includes thinking about your own body mechanics. The way you move your body is equally as important as the way you move the child's body. To avoid injury to yourself, be sure to bend your hips and knees when lifting and transferring a child or piece of equipment.

Make sure to lift the child and carry the child close to your own body. This will reduce the stress on your back and will enable the child to feel more secure. You can prevent injury to yourself and to the child by being aware of good body mechanics.

Note: The videotape that accompanies this module demonstrates appropriate lifting, carrying, and transferring of children. If a video recorder is not available, the instructor should discuss and demonstrate these techniques.

5 minutes

LECTURE/DISCUSSION: Children with Spina Bifida and Premature Babies

Say: Children with spina bifida have multiple problems in terms of movement and independent functioning. A child with spina bifida may or may not be able to learn to walk independently. The injury that results from spina bifida is similar to a spinal cord injury in an adult. Depending on the level of the injury at birth, the child will have more or less movement in the legs.

When working with children with spina bifida, it is very important to realize that these children often have complicated medical problems. They will have abnormal development of the muscles, bones, nervous system, and urinary tract. Therefore, talk with the therapist regarding appropriate positioning and handling of children with spina bifida. These children may use special kinds of adaptive equipment including long leg braces, ankle foot orthotics (AFOs), crutches, or walkers. These are all specialized pieces of therapeutic equipment which help the child to become independent in the environment. These children may also undergo multiple surgical procedures for correcting the alignment of their extremities. The physical therapist can assist you regarding special handling for these children. Children with spina bifida may, or may not, have varying degrees of retardation.

Children who are born prematurely may have a variety of problems. These children may only demonstrate mild movement problems or poor quality of movement control. When you are working with a baby with a history of prematurity, you may notice signs of mild cerebral palsy; alternately there may be no movement dysfunction. A physical therapist and occupational therapist can assist you regarding appropriate activities for a premature child if you suspect a problem. Frequently, these children will demonstrate developmental delays which are very responsive to therapy activities. However, children who are premature sometimes may develop movement problems which may resemble those seen in cerebral palsy. With the increasing technology in services for newborns, children are surviving who, years ago, would have died in infancy. However, many have movement abnormalities. The earlier the birth occurs before it was due, the greater the risk for movement problems. They may have difficulty in calming themselves and they may appear irritable and difficult to quiet.

Summary

Say: This presentation has given an overview of the types of movement disorders that are commonly seen in a high risk or handicapped preschool population. By viewing the videotape and talking with your co-workers, you will have a better understanding of some of the movement problems that you may see in children with whom you may work. We hope you will be able to have a better understanding of why children move the way they do given their medical histories.

When working with children who have physical handicaps it is especially important to remember to be sensitive to the needs of each individual child and each child's family. The preschool child's family plays a very important role in helping to achieve the motor milestones.

In general, if you see a child assuming a movement pattern or position which would be uncomfortable for you as an adult, it is generally advisable to correct the child's position to a more appropriate or familiar posture. This principle should be remembered by all caregivers when positioning children.

As you become more familiar with the variety of disabilities that may appear in the preschool setting, you will develop increasing skill in assisting children with a wide variety of movement disorders to function at their highest movement potential. You will be an important part of the team responsible for helping children to achieve their best motor skills.

Are there any questions?

5 minutes **END OF HOUR 2: Closing**

Module 9

MOTOR DEVELOPMENT: What You Need to Know

Hour 3

Goal: **PARTICIPANTS WILL GAIN KNOWLEDGE OF THE ROLE OF OCCUPATIONAL THERAPY IN THE EDUCATION OF SPECIAL-NEEDS INFANTS AND TODDLERS**

Objectives - ***Participants will gain an understanding of:***

- occupational therapy and the role of the occupational therapist
- the development of the normal grasp pattern
- the development of normal fine motor coordination
- some problems encountered in fine motor development.

5 minutes
(omit if 3-hour presentation)

GREETING, SIGN IN, AND DISTRIBUTION OF HANDOUTS

SESSION BEGINS

5 minutes

LECTURE/DISCUSSION: Introduction/What is OT?

Say: You have just learned all about physical therapy. Now, let's learn about occupational therapy.

Ask: What is occupational therapy, or "OT?"

Instructor leads discussion (explaining terms) to clarify the following definition. Occupational therapy is the application of purposeful, goal oriented activities in the evaluation, diagnosis, and treatment of persons whose function has been impaired by physical illness, emotional disorder, and congenital or developmental disability. The goal of occupational therapy is to achieve optimum functioning, prevent disability, and maintain health.

Say: Actually, what all of that means is, occupational therapy is concerned with physical, motor, or sensory integration problems which prevent children from functioning effectively. In school systems, the aim of occupational therapy is to allow children to acquire the ability to be independent in everyday activities, such as, daily living skills, academic learning skills, or adaptive social or emotional behaviors.

**Handout/
Overhead
9-3-1**

Instructor refers to **Handout/Overhead 9-3-1**.

You have a handout that tells you what occupational therapy is. You may use it to take notes as we talk more.

Let's stop now, for a moment, to think about how children learn.

Instructor pauses.

Ask: How do infants and young children learn best?

Instructor encourages responses. Emphasize that children learn by:

- looking
- listening
- smelling
- tasting
- touching.

Small children use all of their senses. It is important that all of their senses provide good feedback.

Handout/ Overhead 9-3-2

Instructor refers to **Handout/Overhead 9-3-2**.

Say: This handout/overhead tells us how important hands are and gives us some hints as to what occupational therapists do with children.

Ask: Can anyone tell us what they think occupational therapy with children may include?

Instructor encourages responses from the participants.

Say: Occupational therapists work with children on activities that involve the development of three things:

- They work on joint motion. That is, movement of a joint such as the elbow, wrist, or finger (demonstrate).
- They also work on strengthening small or fine muscles such as those in fingers and toes.
- They work on coordination, especially how children move fingers and toes.

Ask: How do you think occupational therapists do this with children?

Instructor leads discussion, including the points listed below, making sure each is explained and understood.

Occupational therapists provide play activities that teach elements of:

- selfhelp
- overcoming fears

- **developing confidence**
- **promoting normal development despite disability**
- **promoting caregiver understanding and training to better comprehend the child's problems and performance.**

Say: Gross motor and fine motor development refer to the acquisition of skills and the ability to:

- control muscles
- coordinate how we move
- to be skillful and adept in that movement.

As young children learn to move physically, they often appear clumsy and uncoordinated. They also lack strength and control. As children develop, so do their physical skills. By approximately age five, most children have developed all of the basic physical movements that they will have. However, they will continually have to learn to adjust and coordinate their movements as their legs and arms grow, and as their bodies get larger.

10 minutes **LECTURE/DISCUSSION: Eye Hand Coordination/Grasp Pattern**

Earlier, we talked about gross motor movement when we learned about physical therapy. Can anyone explain what "fine motor" is?

Instructor listens to responses and summarizes as follows.

Say: Fine motor involves the actual manipulation or handling of objects. Eyes and hands must work together, or be coordinated, in order to manipulate small objects.

Let's learn how fine motor movement begins. Can anyone tell us how they think it might start?

Instructor listens to responses and points out that fine motor coordination begins with the eyes and with the hands, separately.

Again, instructor should caution that the developmental age levels that are about to be given are approximate for fine motor skills, just as they were for the gross motor skills previously discussed.

Say: As the child, from birth to 2 months develops, the child first begins to focus on an object with the eyes. The child also follows moving objects. At the same time, if an object is placed in the child's hand, the baby can grasp and retain it. The child does not yet coordinate looking and grasping. Grasping is actually a reflex, that is, the child does it involuntarily if an object touches the hand, just as the chi[illegible]

Grasp Pattern

Instructor reviews and demonstrates grasp patterns throughout this discussion and asks participants to practice them. Note: the grasp pattern sequence appears on the videotape that accompanies this module.

Say: As children begin to coordinate this perception of what they see, they then begin to reach out voluntarily and grasp for an object. This is the true beginning of fine motor, or eye-hand coordination.

From 3 to 5 months, the child continues to reach out and grasp for objects. Now we see a different grasp pattern. This pattern is called the ulnar palmer prehension.

Handout/ Overhead 9-3-3

See Handout/Overhead 9-3-3.

Say: At this time, the infant brings hands to midline.

Instructor demonstrates bringing own hands together in front of chest.

Say: Soon, the baby will transfer objects from one hand to the other hand. This is an important ski[illegible] dev[illegible] or [illegible] wit[illegible]

Instr[illegible]

Handout/ Overhead [illegible]

Say: From 6 to 8 months, the baby's grasp pattern continues to develop. The infant begins to rake or scoop up small objects. Then the baby begins to pick up small objects with an inferior pincer grasp.

Instructor refers to **Handout** [illegible]. Review and demonstrate.

Say: From 9 to 11 months, the child will poke with an isolated finger. You may see the child repeatedly putting a finger into tiny holes, like those in a peg board or some other toy. At this stage, the child also begins to voluntarily [illegible] tend to hold on to objects until the objects are taken away from them, or until they forget about the object and drop it accidentally. A voluntary release, or drop, tells you that the child's fine motor coordination is developing. It also tells you that the child understands a simple cause and effect relationship.

To better understand a cause and effect relationship, you should realize that babies come to know that by moving their muscles a certain way (that is, releasing their grasp) they can cause the object to fall. (They also soon learn they can get you to give them back their toy!) This is a giant learning step for an infant. It is one of the child's first steps in becoming independent. Children learn that they have the capability to make things happen in their world. [illegible]

It is also at this stage [illegible]

Handout/ Overhead 9.3.5

Instructor refers to Handout/Overhead 9.3.5 and demonstrates. Instructor continues to demonstrate examples through out session.

Say: From 12 to 15 months, the child is gaining some true control. Eye-hand coordination continues to develop. The infant is able to stack one or two large objects, scribble spontaneously, and release small objects into a bottle or box. This is the stage when infants are busy putting things in containers.

Around 16 to 19 months, the child's perception of objects continues to develop further. The [illegible] place a round form into a formboard and imitate simple non-specific crayon strokes. For example, the child can imitate doing a single stroke mark as opposed to a scribble.

By 20 to 23 months, the child will make vertical and circular scribbles after a demonstration. The toddler will hold crayons with the fingers.

By 24 to 27 months, or approximately two years of age, the toddler can imitate drawing horizontal and vertical strokes, use both hands bilaterally, unscrew a jar lid, and scribble in a circular motion.

At about 28 to 31 months, refinement and better control develop. The child will be able to build an eight cube tower and imitate making a fold in a piece of paper.

By 32 to 35 months, the child begins to [illegible]

[illegible]

[illegible]

- manipulate objects
- coordinate movements of eyes and hands
- strengthen movement
- develop coordination and joint mobility
- assume a proper position during fine motor activities.

These skills become helpful in a variety of ways. For example, a dressing skill such as buttoning requires:

- transferring from hand to hand
- perception of placing the button through the buttonhole.
- awareness of and ability to come to midline.

The occupational therapist spends much therapy time with children working on activities of daily living (ADL) skills, such as dressing, bathing, grooming, and feeding. The occupational therapist also teaches the use of simple tools such as spoons, crayons, and scissors. This is where the integrating of fine motor and eye hand coordination is worked on in order that the child can achieve independence in daily living. Some children may require special techniques to learn how to dress themselves due to the disability they have. As children grow, it is important for them to become as independent as possible in all areas.

Characteristics of Normal Development

[illegible]

[illegible]

another in a specific sequence. If the earlier skills are not achieved or learned, higher level skills cannot be learned properly.

Second, each child is unique and not exactly like any other child. It is important to remember when we talk about a child gaining certain skills by a certain age, that we are talking in general terms. For example, I said that the pincer grasp generally appears in infants who are nine to eleven months of age. However, one child may attain this skill at eight months and another may not attain it until twelve months. This variation is all within the range of normal. The ages we are talking about are only approximate. They should be used merely as guidelines.

On the other hand, if a two or three year old toddler does not yet demonstrate a pincer grasp, you may suggest that the parent bring this to the attention of the child's pediatritian or baby doctor. Are there any questions?

5 minutes **LECTURE/DISCUSSION: Abnormal Development**

Say: Having just reviewed normal development of the fine motor coordination, let's talk about abnormal development. Abnormal development occurs when the child has not acquired skills in the normal progression or at the same rate as children normally do. Then, stimulation activities directed by an occupational therapist are required in order to assist the child in developing the skill or skills.

Again, if you suspect a child is not developing normal motor skills express your concerns. The child may be referred to the child's own doctor. If the doctor feels that there may be a problem with the child the doctor may order a physical therapy evaluation. Physical therapists generally evaluate youngsters upon receiving what are called orders. This is a written request by a licensed doctor to do an evaluation. Most of the infants and toddlers seen by occupational therapists do demonstrate delayed development. This slow development can be caused by several different factors. On the other hand, doctor's orders are not always necessary in order to receive occupational therapy.

One of these factors is cerebral palsy, which we talked about earlier. This is a condition caused by damage to the brain that usually occurs at birth. Signals from the brain to the fingers and toes, and to the arms and legs, are poor. As a result, children may have a wide variety of motor delays or problems. These problems or delays can range from being very mild so that they are hardly noticable, to very severe where the child has almost no use of the limbs.

An occupational therapist helps such a child in a way that is very similar to methods used by the physical therapist. Both therapists work on relaxing the child by using such techniques as slow rocking and soft voice. They both also work on whole body positioning. However, the occupational therapist puts more emphasis on fine motor work and uses activities that will increase the ability of a child to use the upper extremities: arms, hands, and fingers. Activities include working with small objects for the baby to explore and incorporating reaching and grasping.

An occupational therapist can also help the teacher of such a child by showing the teacher how to position the child so the child can better participate in and carry out the activities that the teacher has planned.

A second factor that may cause a child to have delayed development involves damage to the brain. Children suffer brain damage from accidents such as near drowning, a serious blow to the head, or electric shock. They show delays similar to those shown by children with cerebral palsy.

Third, babies and toddlers with Down syndrome show a different type of problem. They have very floppy muscle tone, as we learned earlier. Therefore, it is important for occupational therapists to help them strengthen their muscles. They do this with activies that will increase the child's upper extremity stength, trunk control, grasp patterns, fine motor ability, and attention span. Some activities that may be done include weight bearing on the upper extremities, giving children small objects to pick up, placing objects in containers for the child to find, and other eye-hand coordination tasks.

Another condition that some children display is what we call tactile defensiveness.

Instructor writes tactile defensiveness on chalkboard or flipchart.

Ask: Can anyone explain what tactile defensiveness means?

Instructor listens to and comments on responses. Summarize to achieve the following definition, making sure all terminology is clearly understood by participants.

Say: Tactile defensiveness is oversensitivity to sensory input. This means that a child can't organize the sensory input arriving at the brain. The child cannot tolerate what he or she is touching. The child may perceive or feel the sensory input as a noxious or very unpleasant type of stimuli. This is true even if it is only a slight rub up against someone or contact with something soft and furry.

Very often we forget about our sense of touch because as we grow older, touching and feeling become very automatic responses. We take them for granted. We aren't even aware of what we feel - unless it's something like a soft kitten or a velvet dress! We're going to take a minute to experiment with and think about tactual feeling.

15 minutes

ACTIVITY: Bag of Textures

Activity 9-3-1a

Have participants form groups of three to five with those sitting closest to them. Give one bag of textures to each group. (Directions for making bag are on **Activity 9-3-1a** in the Specific Information for Presenting Module 9 section of this module.)

Ask each person to put one hand into the bag and locate one texture. Ask them to think about how they might feel about that certain texture.

- What properties does it have?
- Is it hard or soft, smooth or rough?
- What is it like to touch the object?
- What does the texture make you think of?
- Does it evoke pleasant or unpleasant feelings?
- How might preschool children who may not be able to express themselves feel about touching the object?

Call on participants to share their thoughts and perceptions.

5 minutes

LECTURE/DISCUSSION: What to do about Tactile Defensiveness

Say: That was good! I'm glad we have had a chance to remember what it is like to feel things and use our sense of touch.

Now, close your eyes. Imagine what it would be like to touch a soft piece of fur and find it abrasive and rough like pieces of broken glass. Or what would it be like to brush past a person and have it feel as if they burned your skin? That's what some of our little ones sense when they are touched. Let's try to think of what might be done in our daycare settings to help a child who is tactile sensitive.

Instructor leads discussion to include the following:

- The child may need own mat space.
- The child may need to line up differently.
- The child may bring a comforting and familiar feeling sweater or animal to carry.
- The child may need more time to experience different textures independently. Give the child more time to get used to the sand box, water play, or finger paint.
- The child who has oral problems, such as not liking chopped food, can be helped by having small amounts of foods of different textures introduced slowly.

Handout/ Overhead 9-3-4

Instructor summarizes and refers to **Handout/Overhead 9-3-4**.

Say: The key to helping tactile defensive children is to:

- understand the child's sensitivity
- respect the child's sensitivity
- allow the child time to slowly get used to new textures; don't force the child to touch or feel or taste
- provide new textures, one at a time for short periods and then for progressively longer periods
- don't introduce more that one new texture at a time
- be supportive as the child learns to accept different textures and touches.

5 minutes **Summary**

Say: Our time is about up. I hope you now have a better understanding of what occupational therapy is and what an occupational therapist does, the development of fine motor coordination, the grasp pattern, and some of the fine motor problems that can occur.

We have talked about many things during our three hours together. Are there any questions?

Instructor summarize the three-hour module by asking questions such as those appearing below.

Ask: Who can tell me what a physical therapist does?

Who can tell me what an occupational therapist does?

How do their jobs differ?

How are their jobs alike?

Tell me one important general fact you learned about large muscle motor development.

Who can describe the development of a child's grasp?

When would you ask a PT or an OT for help?

Where would you find one who could help?

5 minutes **Explanation of Six-Week Follow-Up Activity**

Give participants the phone number at which you can be reached should there be any questions regarding the follow-up activity.

END OF HOUR 3 : Closing

Resource List

Finnie, N. (1975). Handling the young cerebral palsied child at home. New York: E. P. Dutton.

Hanson, M. & Harris, S. (1986). Teaching the young child with motor delays - A guide for parents and professionals. Austin, TX: Pro-Ed.

References

Ayres, J. (1979). Sensory integration and the child. Los Angeles: Psychological Services.

Bergen A., & Colangelo, C. (1981). Positioning the client with central nervous system deficits. Valhalla, NY: Valhalla Rehabilitation Publications, LTD.

Blackman, J. A. (1984). Medical aspects of developmental disabilities, birth to three. Rockville, MD: Aspen Publishers, Inc.

Clark, P. & Stevens, A. A. (1985). Occupational therapy for children. St. Louis, MO: C. V. Mosley Company.

Finnie, N. (1975). Handling the young cerebral palsied child at home. New York: E. P. Dutton.

Gilfoyle, E. M. , Grady, A. P., & Moore, J. C. (1981). Children adapt. Thorofare, NJ: Charles B. Slack.

Appendix A

Reproducible Forms for Three-Hour Module

Form	Copies to make
Instructor's Time Table and Notes (2 pages)	**1 per instructor**
Advertising Flier	**As needed**
List of Participants	**Varies - usually 6 to 8**
Follow-Up Mailer (2 pages)	**One per participant**
Note: **Reproduce mailer as one two-sided page by photocopying the second page on the reverse side of the first. This mailer may be reproduced on agency letterhead.**	
Certificate of Completion (1 page)	**1 per participant**

Instructor's Time Table and Notes

MITCH Module Title: ______________________

Training Location ______________________

Date ______________________

Instructor ______________________

Preparation

Date	**Task**	**Completed**
	Review module	
	Preview videotape* and audiotape	
	Arrange for guest speaker*	
	Set date	
	Arrange for room	
	Arrange for A-V equipment*	
	Advertise	
	Photocopy all handouts	
	Prepare any overheads	
	Collect additional materials	

Notes for Training
Hour 1:

Hour 2:

***if applicable**

Trainer's Time Table and Notes, continued
Hour 3:

Six Week Follow-Up Activity

Date	Task	Completed
	Copy letters	
	Send letters	
	Collect activity	
	Review activity	
	Copy certificate	
	Prepare certificate	
	Deliver certificate	
	Record trainees who have completed module	
	Maintain List of Participants on file	

Notes:

Coming . . . MITCH Module 9

TRAINING
FOR
CAREGIVERS
OF
INFANTS
AND
TODDLERS

MOTOR DEVELOPMENT:

What You Need to Know

Wear comfortable slacks/shorts.

Date .... Time ....

Location ....

Training Agency ....

For information and/or registration, call ....

....

....

LIST OF PARTICIPANTS

SIGN IN SHEET
MITCH Module # ______

MITCH module title ______

Training date ______

Training location ______

Instructor ______

Hours Attended			
1st	2nd	3rd	*FA

Please PRINT your name, social security number, home mailing address, phone and place of work.

Full Name ______ Social Security ______
Home Address ______
City ______ State ______ Zip ______
Phone ______ Place of Work ______
Work Address ______ Zip ______

Full Name ______ Social Security ______
Home Address ______
City ______ State ______ Zip ______
Phone ______ Place of Work ______
Work Address ______ Zip ______

Full Name ______ Social Security ______
Home Address ______
City ______ State ______ Zip ______
Phone ______ Place of Work ______
Work Address ______ Zip ______

Full Name ______ Social Security ______
Home Address ______
City ______ State ______ Zip ______
Phone ______ Place of Work ______
Work Address ______ Zip ______

*** Follow-Up Activity completed**

Dear

This is to remind you that the Six Week Follow-Up Activity for MITCH Training Module # ____

Title: ____

is due ____/ _____/ ____.

Please submit your Follow-Up Activity to:

____

____

____

____

If you have any questions, please call:

____________________ *telephone* ________________.

Sincerely,

Staple

Fold #2

From: MITCH Module Training

To:

Fold #1

Certificate of Completion

MITCH

Model of Interdisciplinary Training for Children with Handicaps

____

has completed all requirements for MITCH Module 9, entitled:

MOTOR DEVELOPMENT: WHAT YOU NEED TO KNOW

____

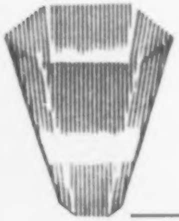
Instructor

____

Training Agency

____

Date



This training module was developed by the MITCH Project, the Florida Diagnostic and Learning Resources System/South Associate Center, and the Bureau of Education for Exceptional Students, Florida Department of Education.

Appendix B

Reproducible Copies of Handouts/Overheads/Booklets

Note:

Each handout is numbered in a three-digit code such as: Handout 3-1-4. The first digit (3 in example) refers to the module number. The second digit (1 in example) refers to the hour of the Module, while the last number (4 in example) refers to the number of the handout itself. Consequently, the example number above denotes the fourth handout to be used during the first hour of Module 3.

DEFINITION OF TERMS

Ataxic: A type of cerebral palsy characterized by poor balance, resulting in jerky and unsteady movements.

Athetoid: A type of cerebral palsy characterized by uncontrolled and continuous movement.

Cerebral Palsy: A disorder of movement and posture resulting from damage to the brain.

Diplegia: A type of cerebral palsy which involves the legs more than the arms.

Extension: Straightening of a body part.

Flexion: Bending of a body part.

Extremity: A body limb (arm, leg).

Floppy Tone: Loose or low muscle tone (hypotonia).

Hemiplegia: A type of cerebral palsy which involves one half or side (arm, leg, and trunk) of the body.

High Tone: Increased muscle tone (hypertonia, rigidity).

Quadriplegia: A type of cerebral palsy which involves the trunk and all four limbs.

Reflex: Movement or postures that cannot be controlled by the child.

Righting: Unconscious ability to move the head and body into a suitable position in space when positions are abnormal or uncomfortable.

Rotation: Movement of limbs, hips, head or other body parts about their axis.

Spasticity: Stiffness or increased muscle tone.

Syndrome: A set of signs or symptoms that occur together and characterize a particular abnormality.

Tactile Defensivess: Extreme sensitivity to touch.

Voluntary Movements: Physical movements intentionally performed.

Module	Hour	Handout
9	1	1

*MITCH: Model of Interdisciplinary Training for Children with Handicaps

Characteristics of Normal Motor Sequence

Normal development occurs on a background of NORMAL MUSCLE TONE.

Infants learn to MOVE AGAINST GRAVITY as the central nervous system develops:

- Flexion is bending at the joint.
- Extension is straightening muscles against gravity.

Movement develops from the head to the feet.

Primitive reflexes gradually diminish or go away.

Module	Hour	Handout
9	1	2(R)

Welcome to the World

Booklet on Normal Developmental Milestones

(A reproducible copy of this booklet follows.)

This handout is recommended for use with MITCH Modules 1, 2, 3, 6, 7 and 9.

Module	Hour	Handout
9	1	3

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Division of Public Schools
Bureau of Education for Exceptional Students

MITCH*

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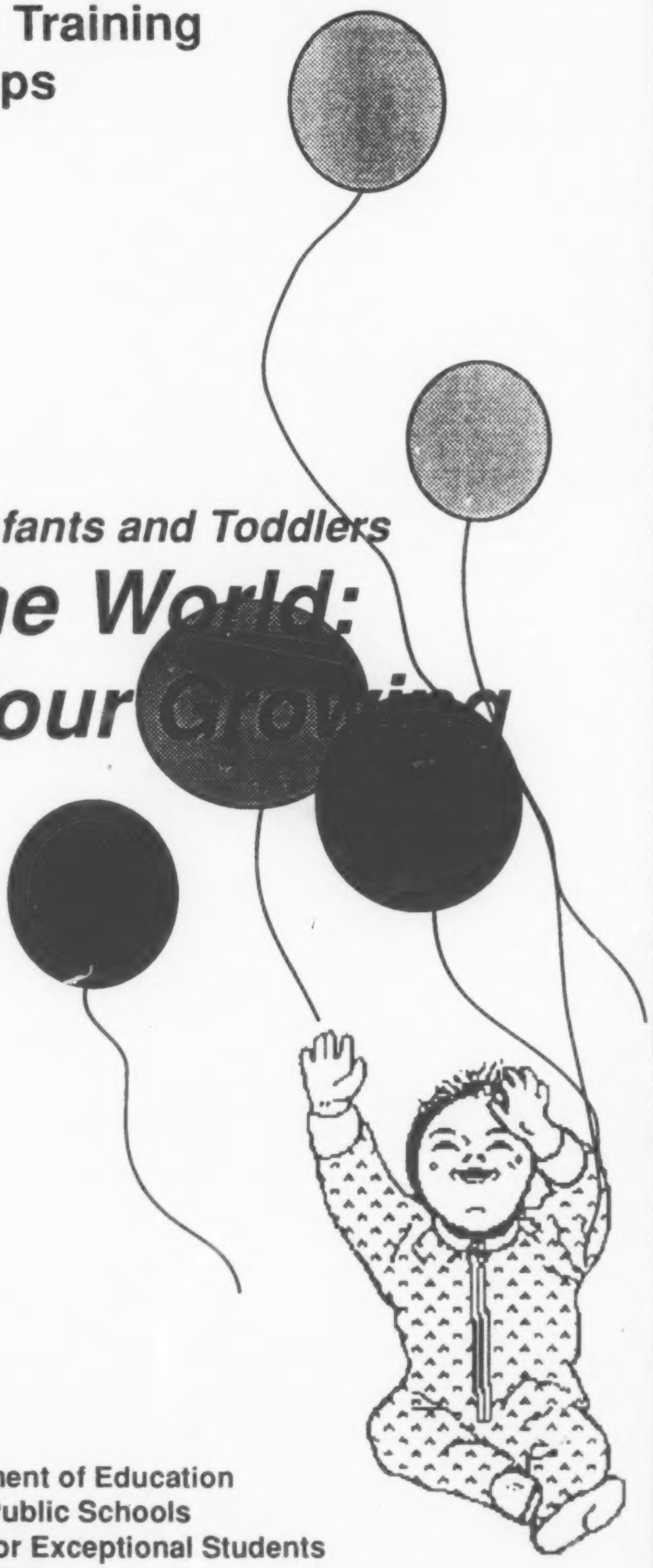
Model of Interdisciplinary Training for Children with Handicaps

A Series for Caregivers of Infants and Toddlers

Welcome to the World: Overview of Your Growing Child



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1990

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Model of Interdisciplinary Training for Children with Handicaps

A Series for Caregivers of Infants and Toddlers

Welcome to the World: Overview of Your Growing Child

Florida Department of Education
Division of Public Schools
Bureau of Education for Exceptional Students
1990

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1989

Model of Interdisciplinary Training for Children with Handicaps

A Series for Caregivers of Infants and Toddlers

Welcome to the World: Overview of Your Growing Child

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Introduction

This booklet is designed to provide a brief summary of normal development from birth to 36 months of age. It describes behaviors typically seen in children at various developmental levels. It gives examples of these behaviors in each of four categories: personal and social skills, language and understanding skills, small muscle skills, and large muscle skills. The booklet also suggests activities that adults can do with infants and toddlers.

It is important to remember, that although all babies follow the same general pattern of growth, all children do not develop at the same rate. Children differ in appearance, in the way they feel about things, and in the way they learn. Also, a baby's development may not be steady. The baby may develop new large muscle skills, such as standing and walking, but not seem to develop new fine motor skills for a few months. Then, the child's large motor skill development may slow down while the child's language skills appear to develop very quickly. Because babies are unique and develop and grow at different rates, this booklet should be used only as a general guideline. The sequence of learning is what is important.

When a caregiver knows what a baby might be interested in and able to do next, the caregiver can better interact and play with the baby. Knowing what things a baby is not yet ready to do will keep the caregiver from expecting the child to play and respond in ways that are not yet possible for the child.

If a parent or caregiver has questions about a child's development, it is best to consult the child's doctor, nurse, or other qualified professional. The local Child Find specialist can also be called. Child Find is associated with the exceptional student education department of Florida's public schools and 18 support centers called the Florida Diagnostic and Learning Resources System (FDLRS) Associate Centers. The Child Find specialist at any FDLRS center can arrange to see a child who lives within that FDLRS region and who may not be developing normally. Call the local public school, FDLRS office, or Florida Department of Education, Bureau of Education for Exceptional Students (904/488-2077) for the number of the nearest Child Find specialist.

Birth to Three Months

PERSONAL AND SOCIAL SKILLS

- Smiles in response to adult's smile
- Looks at face when spoken to
- Tells primary caregiver from other adults
- Startles or cries at sudden loud noises
- Comforts to soothing gentle sounds

Suggested Activities

- Smile at baby
- Hang a crib mobile
- Sing lullabies to baby

LANGUAGE AND UNDERSTANDING SKILLS

- Expresses demands with cries and/or other sounds
- Gurgles and coos
- Responds to sound of rattle
- Shows excitement before feeding and anticipates other familiar events

Suggested Activities

- Talk to baby during feeding, changing, and bathing
- Provide many different sounds for baby (music, rattles, radio, bell, TV, etc.)
- Imitate sounds baby makes
- Listen to, watch, and allow time for baby to respond

SMALL MUSCLE SKILLS

- Follows bright objects with eyes
- Looks at object held in hand
- Attempts to grasp adult's finger
- Holds objects for a few seconds
- Sucks well

Note: Many movements are still controlled by reflexes

Suggested Activities

- Dangle objects in front of baby for baby to watch
- Provide different textures for baby to feel (terrycloth, stuffed animals, plastic toys) making sure objects are too big to swallow.
- Place objects (finger, rattle) in infant's hand to stimulate grasp

LARGE MUSCLE SKILLS

- Lifts head while lying on stomach
- Begins to reach toward object
- Automatically turns head to one side while lying down
- Moves arms and legs

Suggested Activities

- While baby is on stomach, dangle bright objects in front of baby to help baby lift head
- Hold baby in a sitting position so baby begins to hold head steady
- Provide baby with a favorite object to look at in order to help baby roll over
- To encourage sitting, place baby in corner of couch (supervised)

101

Three to Six Months

PERSONAL AND SOCIAL SKILLS

- Laughs
- Smiles on own
- Reaches for familiar people
- Begins choosing toys

Suggested Activities

- Play peek-a-boo with baby
- Let baby look at self in mirror
- Sing simple songs with baby and help baby do motions with hands to the music
- Massage baby's arms, back, and legs from top to bottom

LANGUAGE AND UNDERSTANDING SKILLS

- Squeals and laughs
- Babbles, combines vowel and consonant sounds (e.g., goo, ga)
- Explores objects by putting in mouth
- Chuckles
- Experiments by making sounds (e.g., goo ah)
- Begins to respond to own name
- Begins to show likes and dislikes

Suggested Activities

- Shake rattle beside baby's head (ear) to encourage head turning toward sound
- Continue to talk to baby; name objects
- Listen for baby's sounds and imitate them; wait for baby to respond to your sounds

SMALL MUSCLE SKILLS

- Picks up and holds rattle
- Chews
- Plays with hands at midline
- Starts to transfer objects from one hand to the other
- Holds objects with fingers against palm of hand (palmar grasp)

Suggested Activities

- Put object (rattle) in baby's hand and gently pull it to encourage baby to hold on to object
- Put a toy in baby's hand and let baby hold toy with both hands to encourage baby to transfer or switch object to the other hand
- Help baby pick up small, safe objects (1" blocks, assorted shapes)

LARGE MUSCLE SKILLS

- Brings objects to mouth
- Turns from back to side
- Rolls from stomach to back and then back to stomach
- Pushes up on arms when on tummy
- Holds head upright and steady without support
- Kicks at objects

Suggested Activities

- Put baby on tummy on a safe surface (carpet, blanket, mattress) and dangle interesting toys at baby's head
- Fasten mobile on crib for baby to kick and move baby's legs to demonstrate

Six to Nine Months

PERSONAL AND SOCIAL SKILLS

- Smiles at self in mirror
- Enjoys hide-n-seek, peek-a-boo, pat-a-cake
- Becomes attached to a particular toy or object
- Begins to fear strangers

Suggested Activities

- Hug and cuddle baby often
- Smile and talk to baby
- Play "How Big's the Baby," hide-n-seek, peek-a-boo, pat-a-cake
- Let baby play in front of large mirror

LANGUAGE AND UNDERSTANDING SKILLS

- Starts imitating sounds
- Makes eager sounds for bottle or breast
- Uncovers toy that is hidden by cloth
- Knows own name
- Vocalizes to self when alone

Suggested Activities

- Look at picture books with baby
- Sing songs with baby
- Play hide-n-seek with toys under cloth

SMALL MUSCLE SKILLS

- Starts feeding self
- Rakes or scoops small objects
- Grasps with three fingers (inferior pincer grasp)

Suggested Activities

- Provide baby the opportunity to pick up safe foods (cereal, crackers) and feed self
- Let baby hold crayon in hand and scribble on big piece of paper
- Provide many small objects for baby to pick up making sure they are too big to swallow

LARGE MUSCLE SKILLS

- Sits by self for a short time
- Creeps and crawls
- Pulls self to standing on furniture
- Rocks back and forth when on hands and knees
- Plays with feet when on back
- Stands by holding on to furniture, hands, etc.

Suggested Activities

- Encourage baby to pull up to a standing position
- Place a toy out of reach and encourage baby to try to get the toy by crawling to it
- Allow baby to stand next to furniture
- Allow lots of room for baby to crawl and explore (supervise)

Nine to Twelve Months

PERSONAL AND SOCIAL SKILLS

- Aware of strangers
- Tugs at or reaches for adults to get attention
- Begins drinking from a cup
- Likes or dislikes certain foods
- Demonstrates affection

Suggested Activities

- Have baby sit near the family during meals
- Play pat-a-cake
- Help baby learn to hold a cup containing a small amount of liquid
- Hug and kiss baby often
- Respond with a hug or by talking when baby reaches for you

LANGUAGE AND UNDERSTANDING SKILLS

- Waves bye-bye
- Responds to "no-no"
- Starts understanding simple questions ("Want some more juice?")
- Shakes head "no-no"
- Understands familiar words (mommy, daddy, ball, cookie)
- Looks at pictures in book
- Begins enjoying nursery rhymes and songs

Suggested Activities

- Make puppet from socks and pretend the puppet is "talking" to baby
- Read nursery rhymes and sing songs to baby
- Help baby look at scrap book
- Identify objects with names

- Listen and respond to communication from baby

SMALL MUSCLE SKILLS

- Holds own bottle
- Picks up small objects using thumb and finger
- Uses two hands together with coordination (picks up cup)
- Claps hands
- Drops objects with voluntary release

Suggested Activities

- Show baby how to stack small blocks
- Let baby play with the pots and pans in the kitchen
- Help baby put objects into a container
- Let baby play with empty boxes of all sizes
- Give baby cereal to feed self

LARGE MUSCLE SKILLS

- Gets into sitting position from lying down position
- Sits down from standing position
- Walks with assistance
- Stands alone
- Bangs two toys together

Suggested Activities

- Play stand up, sit down, lie down imitation game
- Help baby to walk with or without support
- Let baby "cruise" around by holding on to furniture and walking

Twelve to Eighteen Months

PERSONAL AND SOCIAL SKILLS

- Enjoys having people clap
- Starts feeling emotions of jealousy, affection, sympathy
- Plays chasing and hiding games
- Shows specific wants by gestures and vocalizations
- Plays ball with an adult
- Becomes attached to favorite possession (blanket, toy)

Suggested Activities

- Provide washcloth for child and allow child to care for doll by washing, hugging, and kissing doll
- Let child help undress self
- Let child start feeding self with a spoon
- Ask child to show how big child is (help child raise hands high)
- Take child on outings (picnic, zoo, parks) and talk about the things you see and do with child
- Roll a large ball to the child and ask child to roll it back to you

LANGUAGE AND UNDERSTANDING SKILLS

- Names body parts
- Points to several objects or pictures when named
- Follows simple commands

Suggested Activities

- Encourage child to repeat familiar words
- While child is bathing or dressing, name body parts and let child repeat the names
- Look at a picture book with child and name objects in the pictures

SMALL MUSCLE SKILLS

- Feeds self with spoon
- Attempts scribbling
- Stacks small objects
- Builds tower of two blocks

Suggested Activities

- Play game with small blocks; stacking, lining up, knocking down
- Encourage child to draw or scribble with a crayon or water soluble marker
- Play with bean bags or soft sponge balls
- Encourage self feeding with spoon

LARGE MUSCLE SKILLS

- Walks alone
- Throws a ball
- Sits in a chair
- Improves balance and coordination

Suggested Activities

- Allow child to walk up stairs with assistance
- Allow child to walk as much as possible
- Give child a pull toy to play with
- Roll and throw ball or bean bag
- Encourage use of child size furniture (chair, table)

Eighteen to Twenty-four Months

PERSONAL AND SOCIAL SKILLS

- Likes being read to
- Partially feeds self
- Independence grows stronger
- Exhibits curiosity and is "into everything"
- Has special relationship with each parent
- Enjoys playing next to another child (little interaction)
- Enjoys touching and hugging

Suggested Activities

- Encourage child to dress and undress self
- Encourage child to pick up and put away own toys
- Encourage child to help with simple household chores
- Encourage child to use both a spoon and a fork

LANGUAGE AND UNDERSTANDING SKILLS

- Makes simple choices among toys
- Mimics another child's play
- Begins to ask questions
- Puts two words together
- Asks for items by name (e.g., "ball," "doll," "cookie")
- Can follow one or two step directions

Suggested Activities

- Begin to give simple directions for child to follow
- Play a simple game of "Simon Says"
- Read to child 5 to 10 minutes each day
- Watch quality TV programs with child and talk about what you see but limit the amount of time child spends in front of the TV
- Answer child's questions simply

SMALL MUSCLE SKILLS

- Scribbles and imitates simple strokes such as vertical lines, horizontal lines, and circular strokes
- Takes off socks and shoes purposefully
- Takes things apart and puts them back together

Suggested Activities

- Help child put objects through an opening in a container, and help child dump them out again
- Use simple nesting boxes or cans
- Give child simple insert puzzle to complete (2-3 pieces)
- Finger paint with pudding
- Provide chalk, markers, pencils, paint, and brushes for sidewalk, large paper, newspaper, etc.
- Let child handle clay, play dough (recipe follows), and shaving cream
  1 cup flour *2 Tblsp. cream of tartar* *1 Tblsp. oil*
  1 cup water *1/2 cup salt*
  Mix all together. Color with food coloring if desired.

LARGE MUSCLE SKILLS

- Jumps with two feet
- Moves body in time to the music
- Walks up and down stairs with help
- Runs
- Attempts to kick a ball

Suggested Activities

- Show child how to jump holding child's hand while jumping
- Let child listen to music and show child how to swing, clap, and dance to the music
- Have short running races on soft surfaces (grass, carpet)
- Play "Kick the ball"

Twenty-four to Thirty-six Months

PERSONAL AND SOCIAL SKILLS

- Interacts with other children in simple games
- Verbalizes toilet needs

Suggested Activities

- Praise child when toilet needs are indicated
- Play "Ring Around the Rosie," "Duck, Duck Goose"
- Play hide-n-seek
- Play dress up

LANGUAGE AND UNDERSTANDING SKILLS

- Follows two-step directions
- Takes part in simple verbal conversation (e.g., "What's your name?")
- Answers simple "what" questions
- Uses two or three word sentences regularly (e.g., "Me want juice.")

Suggested Activities

- Allow child a choice of foods at mealtime
- Ask child to follow directions (e.g., "Pick up your doll and put it on the shelf, please.")
- Listen to and talk with child
- Read books for 10 minutes each day with child and talk about the pictures

SMALL MUSCLE SKILLS

- Uses spoon and cup independently
- Helps pick up toys
- Turns handle to open door
- Completes simple insert puzzle (3-4 pieces)
- Unscrews lids

- Builds 6-8 cube tower
- Snips paper with scissors

Suggested Activities

- Provide simple puzzle for child to complete
- Provide child with blunt scissors and paper to snip
- Provide sand, pudding, or finger paint for writing with finger
- Provide many containers with tops to open and close

LARGE MUSCLE SKILLS

- Rides tricycle
- Pushes or pulls door open
- Walks up stairs holding rail

Suggested Activities

- Arrange for child to play games with others such as "London Bridge is Falling Down," "Tag"
- Encourage practice in skipping and hopping
- Provide practice in riding a tricycle
- Show child how to jump over a chalk mark or hose

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Abnormal Motor Development

ABNORMAL MUSCLE TONE

Diagnosis

- Cerebral Palsy
- Developmental Delay

Types

- Spastic or high tone
- Floppy or low tone
- Variable (from high to low) tone

Degree

- Mild
- Moderate
- Severe

ABNORMAL REFLEX ACTIVITY

These are normal reflexes that become abnormal when they do not disappear or go away naturally.

- **Moro Reflex** - This abnormal startle reflex interferes with a child's ability to protect self.
- **Asymmetrical Tonic Neck Reflex** - This abnormal reflex intereferes with a child's ability to bring hand to mouth.
- **Symmetrical Tonic Neck Reflex** - This abnormal reflex interferes with a child's ability to shift weight from side to side, a necessary skill for crawling.
- **Hand Grasp Reflex** - Children with this abnormal reflex have difficulty releasing their grasp once they hold an object which interferes with exploring.
- **Foot Grasp Reflex** - This abnormal reflex causes a child's toes to curl which interferes with maintaining standing balance.
- **Tonic Labyrinthine Reflex** - This abnormal reflex interferes with a child's free use of arms, legs, and head when the child is on back or tummy.

Module	Hour	Handout
9	2	1

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Abnormal Motor Development (con't.)

Types of Cerebral Palsy

- **Hypotonic** - decreased muscle tone
- **Spastic** - increased muscle tone
    - Hemiplegia - involvement on one side of body
    - Quadriplegia - involvement in all four extremities and trunk
    - Diplegia - involvement in all four extremities but lower are more involved than upper
- **Athetoid Cerebral Palsy** - changes in muscle tone from high to low with rotary movement patterns
- **Ataxic Cerebral Palsy** - normal or slightly decreased muscle tone; wobbly when sitting or standing

Poor Quality of Movement

Associated Disorders:

- **Seizure Disorders** - seizures are of many types; for further information refer to MITCH Module #8 (Health Care), the Epilepsy Foundation, and nurses and hospitals
- **Visual Problems** - interferes with normal exploration; caregiver should use toys that make sounds and/or have textures
- **Hearing Problems** - interferes with communication; caregiver should establish visual contact.

How to Help:

- **Choose play activities at the right level.**
- **Let child do activities over and over.**
- **Handling: relaxation with high tone and stimulation with low tone children.**
- **Positioning: the caregiver may need equipment and instruction from a physical therapist.**

Module	Hour	Handout
9	2	1 (con't.)

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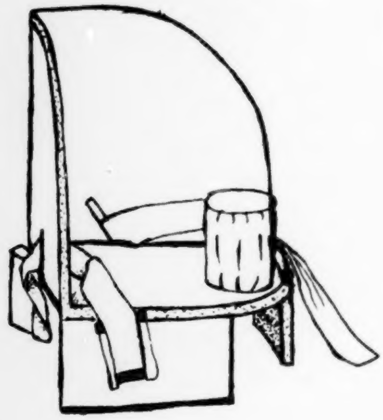
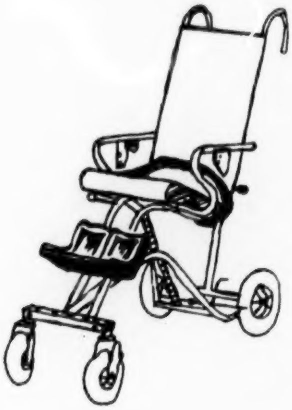
Common Types of Adaptive Equipment and Positioning

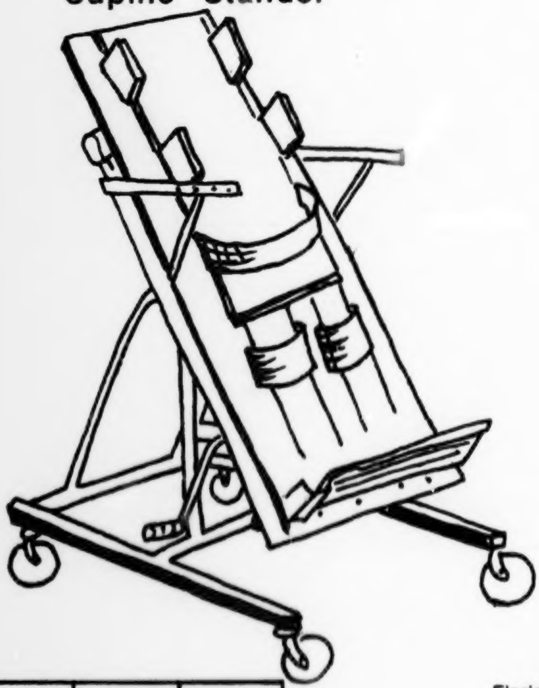
Corner Chair



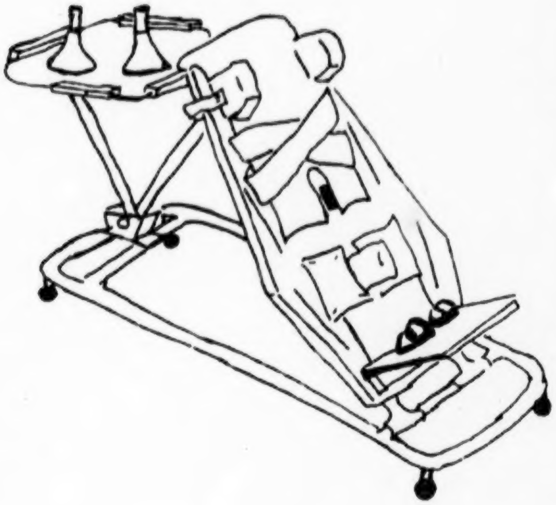
Travel Chair



Supine Stander



Prone Stander



Module	Hour	Handout
9	2	2

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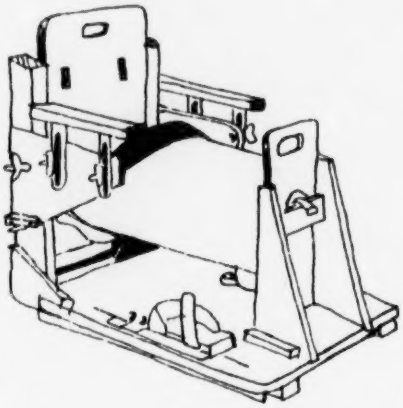
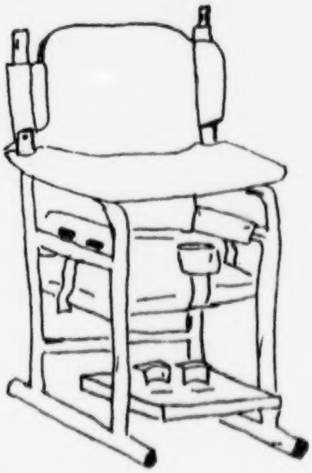
Common Types of Adaptive Equipment and Positioning

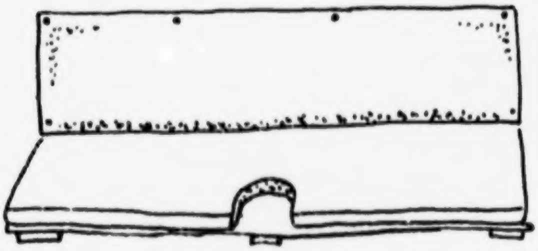
Bolster Chair



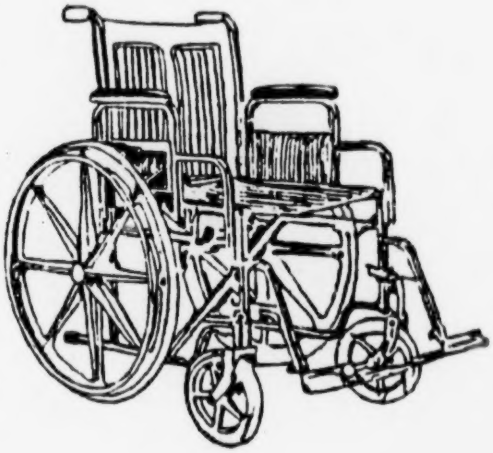
Ultra Adjustable Chair



Sidelying Positioner



Wheelchair



Module	Hour	Handout
9	2	2 (con't.)

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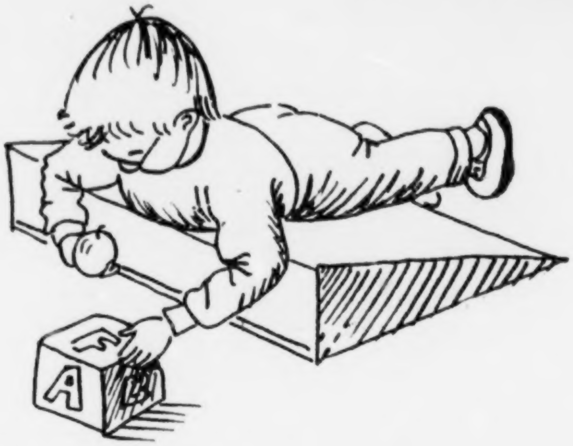
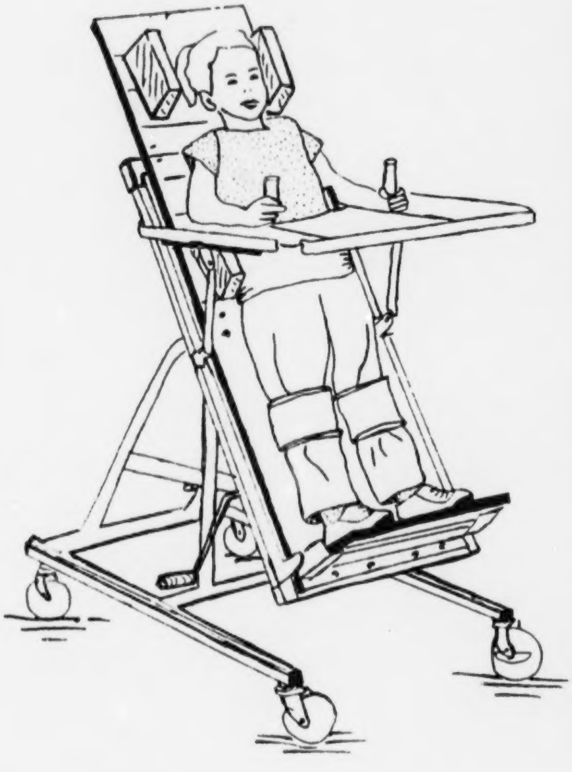
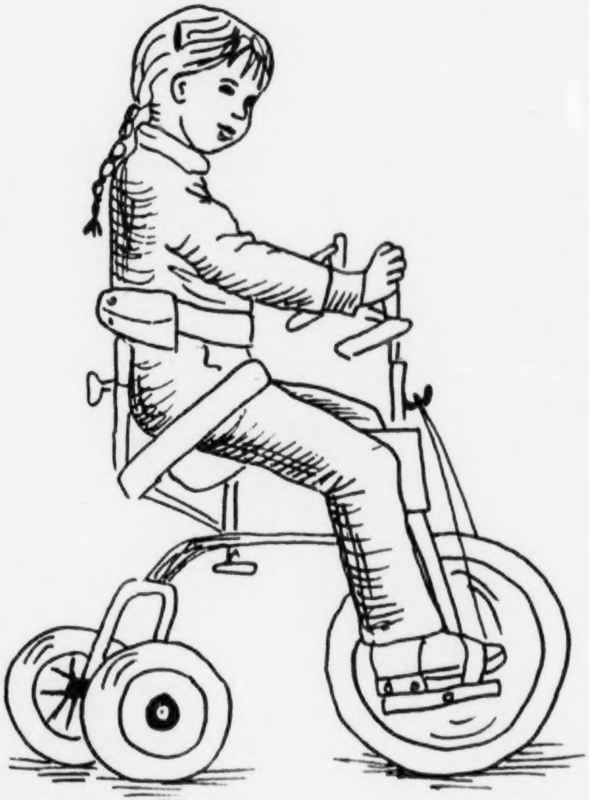
BEST COPY AVAILABLE

Common Types of Adaptive Equipment and Positioning







Module	Hour	Handout
9	2	2 (con't.)

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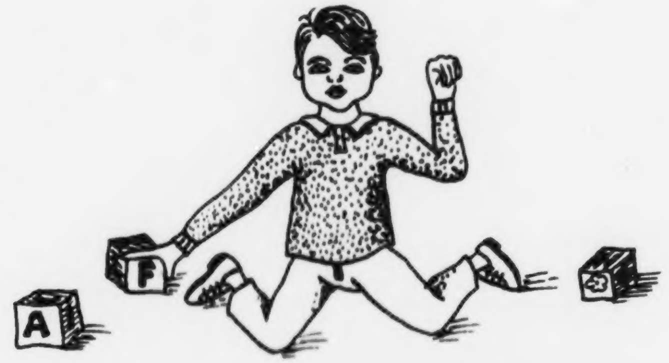
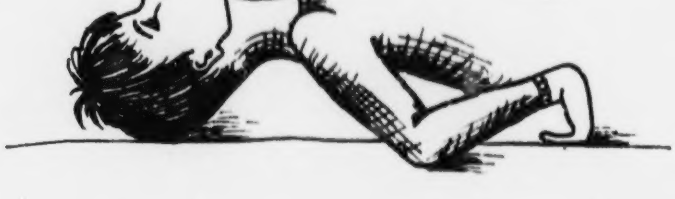
STOP



W - SITTING



EXTENSOR PATTERN IN SUPINE

Module	Hour	Handout
9	2	3

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OCCUPATIONAL THERAPY IS . . . .

concerned with physical, motor, or sensory integration problems which prevent a child from functioning effectively.

Occupational Therapists work with children on developing:

- joint motion, such as in elbows, wrists and knees
- strength in small (fine) muscles such as those in fingers and toes
- coordination, such as in moving fingers and toes

Occupational Therapists provide a specialized play to teach:

- maximum functioning in daily living skills, academic learning, and adaptive social/emotional behaviors
- overcoming fears
- developing confidence
- promoting normal development despite disability

Module	Hour	Handout
9	3	1

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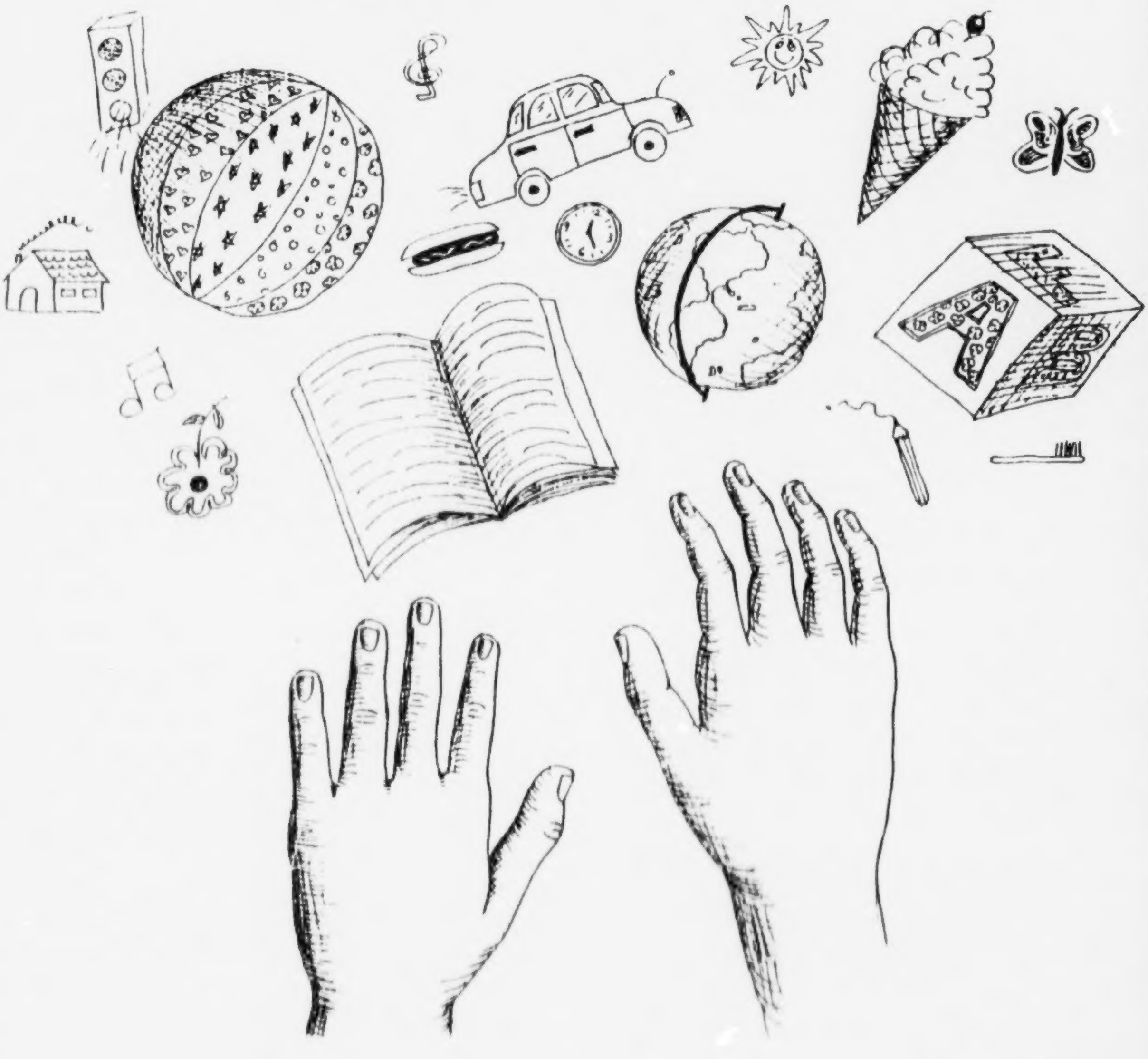
The Hands provide a means to reach out to the world in order to discover it.



Module	Hour	Handout
9	3	2

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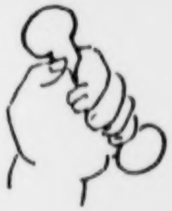
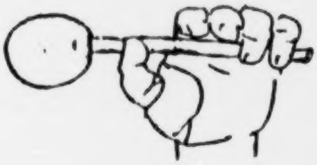
Refinements of Grasp Patterns

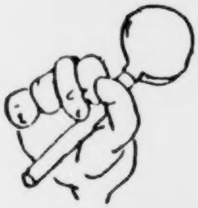
1. **REFLEX (birth to approximately 2 months)** - When the object contacts the palm of the hand the muscles tighten and the hand closes.



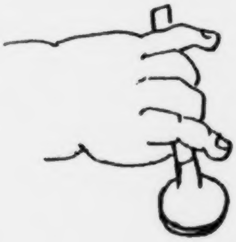
2. **ULNAR PALMAR PREHENSION (3 to 5 months)** - The child grasps with the ulnar (small finger side) three fingers and palm of hand. The thumb is not included.



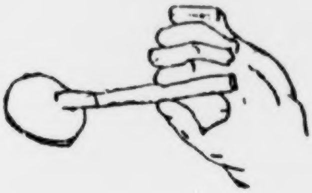
3. **RADIAL PALMAR PREHENSION (3 TO 5 months)** - Child grasps with radial (thumb) side of hand. Now the child uses the thumb and radial (first two) fingers.



4. **INFERIOR PINCER GRASP (6 to 8 months)** - The child uses the thumb and the index finger side, or thumb and middle two fingers, to pick up small object. This is sometimes called a three-point grasp.



5. **NEAT PINCER GRASP (9 to 11 months)** - The child uses the thumb and index finger pads or tips of the two fingers.



Module	Hour	Handout
9	3	3

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Helping Tactile Defensive Children

- Understand the child's sensitivity

- Respect the child's sensitivity

- Allow the child time to slowly get used to new textures - don't force the child to touch, feel or taste

- Provide new textures one at a time for short periods, then, for longer and longer periods

- Don't introduce more than one new texture at a time

- Be supportive

Module	Hour	Handout
9	3	4

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Appendix C

Reproducible Forms for the Six Week Follow-Up Activity

The Six-Week Follow-Up Activity

MITCH Module 9
MOTOR DEVELOPMENT:
What You Need to Know

These completed forms should be sent to:

Name ______________________________
Address ______________________________
____
____

These forms are due at the above address by ____________
date

Directions:

The participant should complete the questions on the following pages. It may be helpful to consult with the director of the caregiving setting or with a physical or occupational therapist who may be familiar with the child identified by the caregiver. Remember, for reasons of confidentiality, use the child's first (given) name only, and not the child's last name.

Name ______________________
Date ______________________

MITCH Module 9

1. List three normal motor milestones for a one year old child.

____

____

____

2. Identify a child who you think may have delayed or abnormal movement.

First name: ______________________________ Age: ______

Does the child demonstrate any abnormal reflexes?

Yes ______ No ______

If yes, describe. ____

____

____

3. What type of muscle tone does the child demonstrate?

Floppy (low) ______
Spastic (high) ______
Normal ______

Name ____________________

Date ____________________

4. Is the child being seen by a physical therapist?

Yes _______ No _______

If yes, have you talked with the therapist?

Yes _______ No _______

If yes, has the therapist showed you how to position and/or work with the child?

Yes _______ No _______

5. Do you think a safety travel chair or other adaptive equipment would be helpful?

Yes _______ No _______

6. Define fine motor and gross motor movement.

____

____

____

7. Name three gross motor activities.

____

____

____

Name ______________________

Date ______________________

8. Name three fine motor activities.

____

____

____

9. What is tactile defensiveness?

____

____

____

10. What might you do to help a child overcome this problem?

____

____

____

For ease of use, instructor is encouraged to remove the staple on this booklet and place the module into a three-ring binder.

Trim the binder identifier to an appropriate size, and affix to the spine of the binder.

BINDER IDENTIFIER

Motor Development:
What You Need to Know

State of Florida
Department of Education
Tallahassee, Florida
Betty Castor, Commissioner
Affirmative action/equal opportunity employer